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LESSONS OF THE WAR: PERSONAL OBSERVATIONS AND IMPRESSIONS OF THE FORCES AND MILITARY ESTABLISHMENTS NOW IN SOUTH AFRICA.

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Commanding Queen's Westminster Volunteers.

Monday, 30th April, 1900.

Major-General J. F. MAURICE, C.B., R.A., *p.s.c.*, Commanding Woolwich District, in the Chair.

THIRTY years ago, General Maurice, I made my first speech in the theatre of this valuable Institution. At the invitation of the Council, it was my privilege often in subsequent years to deliver addresses upon Foreign Armies—the Russian, the German, the Turkish, the Austrian, and the armed strength of Europe. In it a three days' Conference also formulated, in 1878, at my instance, the first definite suggestions for the improvement of the Volunteer Force. They bore, and are still bearing, good fruit.

My desire has always been to see the Volunteer Force so intimately connected with the Standing Army as to afford it not only an immense reserve for home defence, but a valuable adjunct in the field. When, last August, war with the Transvaal Republic seemed highly probable, I made application to be allowed to raise from the whole Volunteer Force a picked battalion of 1,000 marksmen for active service, should occasion require. This was repeated in October and November.

The black week of December, 1899, will long live in British recollection. The disasters of Stormberg, Magersfontein, and Colenso followed in rapid succession. They alarmed the nation. They aroused the War Office. There was as prodigal an acceptance of service of any kind, as there had previously been abrupt and ungrateful refusal. The patriotism and determination of the country were evident, and the Government was not slow to feel the pulse of the nation.

The Lord Mayor of the City of London, assisted by Colonel Boxall, V.D., came forward with funds no one else could have commanded, and an irresistible energy. The proposal of Colonel Balfour and the London Scottish to send a company to the Gordon Highlanders was also accepted, and made to apply to all Volunteer corps having Line battalions in the field.

In a few days a fund of over £100,000 was forthcoming, and owing to the Lord Mayor's persistence and steadfast refusal to understand the word "impossible," the City of London Imperial Volunteers, under Colonel MacKinnon, left London in less than a month from the time the matter was first taken in hand.

I must confess myself to a feeling that there was still truth in the old proverb "More haste, less speed," and it was not unsupported by the experience of others in authority.

But these were matters of detail. In the end they came out well.

I had been offered and had accepted command of a Division. But, in common with 36½ per cent. of the Regular Army ordered for active service, I reckoned without the doctors. They declared me insufficiently recovered from an attack of illness in October and November for the field. So I left at once for South Africa on my own account. Three weeks on a Castle-Union liner is the finest restorative, with the South African climate to complete, although 250 officers and 5,000 men have been sent home as invalids. I was in hopes that the Commander-in-Chief in the field would in the altered circumstances be able to find me the employment sought, but all the youth and vigour of the British Empire were at his door with like request.

Lord Roberts gave me, however, permission to visit the various armies, camps, and military establishments, and it is the result of these visits that the Council ask me to-day to narrate.

THE BRITISH IN SOUTH AFRICA.

Before, however, one enters into military questions, it is essential to say one word as to the British and their Possessions in South Africa. The Cape of Good Hope was discovered by the Portuguese just over 400 years ago. In 1652 the Dutch East India Company took possession of it, and for nearly a century and a half held it amid perpetual complaints from the settlers against tyrannical Governors. In 1796 the English occupied the Cape at the request of the Netherlands, to prevent its falling into the hands of France, and restored it in 1803. In 1806 it had, however, to be re-occupied by us, and at the Peace of 1814 Cape Colony was finally ceded to the British Crown on payment of some millions sterling to the Netherlands.

Since then manifold have been the difficulties in its administration, many the blunders, frequent the wars and disputes with the natives and the descendants of the Dutch and Huguenot colonists. Between 1834 and 1837 the Dutch, furious at the abolition of slavery, undertook the Great Trek from Cape Colony to Natal. There they established a separate government at the muzzle of the musket. They harassed the

remaining natives, they imperilled British interests. The annexation of Natal by the Queen in 1843 became necessary. The Boers trekked to the north and west. The Orange Free State and the South African or Transvaal Republic were recognised between 1852 and 1854. In the latter the turbulent spirit remained undiminished. When unable to fight with natives, the Boers quarrelled with each other. Disaster was only averted by the British annexation in 1877. It was followed by some ill-advised steps, and especially by the replacement of a popular and genial civil administrator by a military officer of more austerity than tact, and who, for other reasons, became peculiarly distasteful to the governed. The risings, the disasters, and the shameful peace of 1881 resulted, and since then there has been no rest.

DIFFERENCE BETWEEN CAPE COLONY AND NATAL.

It is necessary also in connection with South African affairs to remember the vast difference between Cape Colony and Natal. Cape Colony is the original home of the Cape Dutch. Its 400,000 white inhabitants, amidst over a million Kaffirs and persons of mixed blood, consist of about 250,000 Dutch, who in legislature and justice retain their language, and belong to the Dutch Reformed Church. The remainder are British. In Canada, in India, and elsewhere, different races agree perfectly under the sceptre of the Queen. It has been less so in South Africa. Strife is frequent. The fault is, perhaps, as much on one side as on the other. The Dutch are obstinately conservative, slow to move, adhesive to old ways and old methods, and though law-abiding and religious, very jealous of their vigorous, energetic British neighbours, and greatly resenting their oft-vaunted superiority. The country is to a great extent a wilderness—desert plains of arid sand, interspersed only by the karoo and addo bush, succulent to cattle, sheep, and goats, but much visited by flights of locusts, resembling a heavy snow-storm, and doing untold damage. There are bright patches, but they are few and far between. Water is said to be obtainable, but is as yet scarce. In Australia an acre will often carry five sheep. Between Table Bay and Modder River, if not far beyond, three acres are required for one sheep. The farms are therefore of enormous size. Life on them is lonely. They are mostly in Dutch hands. In the Eastern Provinces things are brighter. There are English settlers, and ostrich farms betoken greater prosperity, but they rarely lead to fortune.

Natal, upon the other hand, is a different country—geographically and politically. The endless plains of Cape Colony are replaced by the mountain scenery of Switzerland. The clamour of contending factions is replaced by a harmony of sentiment rarely met with. The Dutch are not in the ascendant as in the older Colony, but in a small minority—one-twelfth of 60,000 whites, amid three-quarters of a million stalwart Zulus, the finest native race in South Africa. The Administration is enlightened and enterprising. At its head a popular and genial Governor, Sir Walter Hely Hutchinson, and a Premier, formerly a Colonel of Engineers, whose urbanity has dissipated all opposition. The municipalities take their line

from the Government. No corporation is better administered than Durban. Wide streets, beautiful avenues, faultless cleanliness. The people are all Imperial, and, finding little or no opposition in argument, are fair and broad-minded.

There is but one drawback—the great heat—and in some districts, want of water. These make it unsuitable for British immigration to any extent. The Government has, however, brought over some 50,000 of the Queen's loyal Indian subjects, who frequently find prosperity upon the fruit plantations, and, in any event, enjoy every fraternal protection and facility for return at the end of a fixed period to their own homes.

Only one prefatory observation more, and that is the enormous distances which have to be overcome in South Africa, the hundreds and hundreds of miles with great difficulties of inter-communication. This is of supreme importance to bear in mind. In examining the present campaign, remember always that your armies have been and are fighting in a country which can furnish next to nothing, except perhaps a few cattle decimated by rinderpest, over 6,000 miles away by sea, and then between 700 and 800 miles of land, served only by a single railway, and that only up to a certain point.

Or, to put it in another way. You start from Calcutta, you land at Marseilles, and you are fighting at Hamburg, shorn of all resources, and you have lines of land communications of over 1,200 miles to protect.

THE FEEDING OF THE ARMY.

It has been said that "an army fights on its belly." This is more true of the British Army than of any other. The officers are accustomed to every luxury, the men to more ample fare. Unless well fed it can do nothing. It is moreover a voluntary Army.

To every British soldier in the field has to be conveyed every day for necessities no less than 6½ lbs. avoirdupois, of which 1½ lbs. are for cases, tins, etc., leaving 5 lbs. net. For every native follower 3 lbs. For every horse 12 lbs. has to be brought up, and for every mule 8 lbs.

You may take it that in round numbers the Field Force in South Africa numbers 200,000 British troops, with 50,000 camp followers. That is a quarter of a million persons, with 40,000 horses and 30,000 mules, who have to be provided for upon this scale. The total is absolutely appalling. It means the daily conveyance of over 600 tons of necessities for the troops, for camp followers, and for animals. The forethought necessary for the purchase of these enormous stores is great. The calculations must be made months ahead. But it is small compared to the difficulties of sea and land transport. Yet so smoothly have things worked, so admirable have been the arrangements, that not only have supplies never been short, but there has been scarcely a difficulty about a single meal, save on the loss of a convoy. I do not hesitate to say that no great army in the field has ever been so well fed, and with such extraordinary regularity.

Honour to whom honour. The credit for this state of things rests in part with the authorities at home, in part with the Transport Depart-

ment of the Admiralty, but most of all with the Army Service Corps and the organisers of Army Transport. It is a duty to pay homage to this service, whose labour is greatest, whose opportunity for distinction is least, but upon whom depends the fighting efficiency of the soldier, more than upon armament, and more than upon leadership, for if it fail both guns and generals are valueless.

The troops in South Africa have received as a daily ration per man :— 1 lb. of fresh or preserved meat (increased to $1\frac{1}{4}$ lbs. when the supply of cattle has been abundant), $1\frac{1}{4}$ lbs. of fresh bread or 1 lb. of biscuit, flour, or meal, $\frac{1}{2}$ lb. of potatoes or other fresh vegetables, or $\frac{1}{4}$ lb. of onions, or 1 tin of pea-soup, 1 oz. of chocolate, or $\frac{2}{3}$ oz. of coffee, or $\frac{1}{3}$ oz. of tea, with 3 ozs. of sugar, $\frac{1}{2}$ oz. of salt, and $\frac{1}{36}$ oz. of pepper ; and 12 ozs. of jam or marmalade a week.

In addition to this, spirits and lime-juice have to be carried for issue as the Commander-in-Chief may direct, and hospital diets of arrowroot, bovril, brandy, calf's-foot jelly, champagne, cocoa paste, cornflour, roast fowls, condensed milk, extracts of meat, port wine, etc., besides a large quantity of disinfectants.

These stores, independently of tents, clothing, arms, and ammunition, have had to be conveyed not alone by sea, but also along a single line of railway, both in Cape Colony and Natal, and then by ox-wagon and mule transport.

One word as to the railways. No words can express the debt of the military authorities to Mr. Elliott and Mr. Price of the Cape Government Railway, or to Mr. Hunter of the Natal Government Railway. Protected by Colonel Girouard, Captain Leggett, and the Railway Staff Officers against subordinate military officials, the railway managers, their inspectors, station masters, conductors, drivers, firemen, and shunters have worked incessantly and with such success that civil traffic has not been seriously interfered with. When rewards come to be considered they must not be forgotten, nor yet those who so successfully sent six hundred special trains of troops from London to Southampton, and thence carried them over the ocean. The German calculation is that not more than 40,000 men can be fed upon a single line. In Cape Colony more than thrice this total has been reached, and without great interruption of the civil traffic.

But it is not only a matter of railway. The Western Army alone has required 2,000 ox-wagons, each with a 16 span, or over 30,000 oxen. An ox-wagon trekking alone may carry up to 8,000 lbs., but not more than half that when moving in military convoy, or 3,000 lbs. if the march is in any way forced. Its animals cannot move quickly, nor yet by day, when they must rest and feed, and each requires a driver and leader. The hire rate has been 45s. 6d. a day per team.

I have dwelt upon these matters because it is important that they should be remembered by those at home.

For the efficiency of the Army Service Corps we owe much to Sir Redvers Buller. Those of us who joined the Army thirty years ago know how defective it was. Those of us who know foreign Armies, know how defective it often is. In the Queen's service the best officers and men

have been happily attracted to it. In Cape Colony they have been submitted to an especial strain, and the Army and the country owe much to the discipline and loyalty of all under Colonel Richardson and Colonel Bridge. All the work of recent years had made each marching unit complete in the matter of transport. Every driver took pride in getting his brigade or regimental stores up in time. Commanding officers prided themselves upon their animals.

The Field Army Order of 24th January, 1900, abolished the carefully matured War Office Scale of Transport in Cape Colony, by a stroke of the pen; it made it all general. Every company of the Army Service Corps was divided into two. New officers on a liberal scale of allowance were imported. It was a risky experiment in mid-stream. But Lord Kitchener is great in re-organisation. His energy, enthusiasm, decision, and ubiquity command the greatest admiration. The end justified the means. Of course Lord Kitchener did not act without good reason. His object was that the transport should always be working as required for the whole army, although a marching unit might be resting. But the army undoubtedly hopes that the general system of transport may not permanently replace the brigade and regimental system which has been productive of such happy results.

EXCELLENCE OF BASE ARRANGEMENTS.

The observations made upon the excellence of the Commissariat and Transport arrangements apply generally to all those connected with the base. The highest foreign authorities present with the armies have told me that they could not be improved upon, that they taught them much. This applies to the disembarkation and forwarding of troops, as much as to their victualling and the repair of casualties in men and horses. Officers full of life, activity, and hope, resent being left at the base, or being placed in arduous thankless posts on the line of communications, and they fret to be at the front. Indeed, to the glory of the British race be it said that the difficulty of the Commander-in-Chief in this campaign has been not how to feed the front line, but to satisfy the cravings of the representatives of each part of the Empire, each branch of the Service, Volunteers and Regulars, *pro patria mori*. So long as this is so, we can do without conscription. A free soldier is worth two conscripts. The latter can be taken to the battle, but cannot be made to fight, any more than the horse taken to the water can be made to drink. But assuredly whether in docks, at railway stations, remount establishments, or at base depôts, officers, and non-commissioned officers and men are rendering not less valuable service to their Queen and their country than those who head the march or lead the charge.

THE MEDICAL ARRANGEMENTS.

First and foremost in the organisation of the base of our army in the field comes provision for the sick and wounded.

If no army has ever been better fed than that in South Africa, it is no less true that no army has ever been better doctored.

The Royal Army Medical Department, under Surgeon-General Wilson, has covered itself with honour. Lord Lansdowne has called to its aid the highest professors of contemporary surgery. It is true that their duties and responsibilities might have been more clearly defined, but their presence and counsel have brought timely advice and comfort to many a sufferer.

Large numbers of zealous civil practitioners have also been employed, while noble and devoted women have come forward in endless stream to place their nursing skill and kindly sympathy at the disposal of the injured. I have visited nearly every hospital connected with the armies in South Africa, and if Cape Colony presented perhaps greater luxury and comfort than the army in Natal, there is at least but little room anywhere for aught but unqualified praise. Especially is this so as to the base hospitals, placed as a rule amid attractive surroundings. It is also true in large measure of the stationary and the field hospitals; dressing stations must unavoidably be rough, nor can conveyance by ox-wagon, or ambulance—the transport alterations reduced the number of ambulances—be easy. A military hospital can rarely be upon quite the same standard as a civil hospital. It has no choice of patients. Its business is to deal as effectively and quickly as possible with them as they come—perhaps two hundred or more by a single train, thrice that in a single battle. Its business is to get them back to the front or away to the base as soon as may be, to make room for others, for, as the intercessory prayer says, “Many must inevitably suffer.”

But it is in the field that admiration for the Royal Army Medical Corps is most elicited. In the very front line, with little to stimulate their courage, save the whiz of bullets overhead, and of suffering below, the surgeons devote themselves to their humane duties. Even so the stretcher-bearers, among whom and in the hospitals there are no less than 1,200 volunteers from the St. John Ambulance Brigade. They enjoy no immunity. They are exposed to all the risks, their duties are responsible and painful, and the opportunities for distinction are few.

The medical results are on a par with the medical arrangements, the proportion of dead to wounded (one to five) is less than in any previous campaign, the proportion (25 per cent.) of convalescents and returns to the front within a few weeks is greater, while the deaths in base hospitals are less than 2 per cent. Much of this is due to the admirable nursing of the highly-trained, noble-hearted, scarlet-caped women who belong to the Army Nursing Staff or its Reserve. Seventy-five per cent. of the wounded recover. Stomach, spine, and head wounds have alone proved serious, and it remains to be seen if invention cannot find some portable protection—such as the *Boynston* shield—against them in the next war.

Protection, however, against enteric fever demands even greater attention. How far inoculation has been successful as a safeguard, or in reducing severity, remains to be seen.

But despite enteric and despite the ravages of free trade in contagious disease, and which ostrich-politicians insist shall be allowed to

spread unchecked "unto the third and fourth generation," and despite variations in temperature, often between 30° and 40° between 3 p.m. and 3 a.m., the Army has been wonderfully healthy.

GENEROSITY OF THE PUBLIC.

In connection with the sick and wounded must assuredly be mentioned the extraordinary generosity of the public towards the troops in the field.

Apart from numerous hospitals placed at the disposal of the authorities by public societies and private individuals—the Princess of Wales's ship, Princess Christian's Red Cross train, the Portland hospital, the Iveagh hospital, the Yeomanry hospital, the American hospital-ship "*Maine*," the Langman hospital, and others, I calculate that to the Lord Mayor's fund, to the Absent-Minded Beggar's fund, to the *Daily Telegraph* fund, and to numerous funds in counties, cities, and boroughs, organised by civic authorities and private individuals, the British public has voluntarily subscribed in the last six months upwards of £4,000,000 sterling for the comfort of the troops in the field, the relief of widows and orphans, and the succour of the sick. Who, after this, can say that we are not a military nation, that the Army is not a popular institution, that we are not grateful to those who fight for England?

THE QUEEN'S CHOCOLATE.

But undoubtedly, the gift among so many which has elicited the greatest appreciation from the soldiers is the gracious New Year's present made to each man in South Africa on 1st January, 1900, by Her Majesty herself. That box will be handed down from many a generation in many a family, and be ever held in proof of the Queen's sympathy and Queenly thought for the humblest of Victoria—Queen and Empress.

In analogous category must be placed the extreme kindness to the troops, and especially to the sick and wounded, of British residents in South Africa. Quantities of fruit—often too much, considering the prevalence of dysentery, reading-room tents, seats, and every kind of small comfort has been showered upon them in camp and hospital, on the railway, and so far as possible on the march. The children made small subscriptions among themselves, and ladies have met nearly every train with sick from the front, and provided tea, coffee, or milk for all as they came, or were carried, on to the platform.

THE TROOPS IN THE WEST.

The armies of operations have been three in number, the Western in Cape Colony, in two columns, under Lord Methuen and General French respectively; the Central under Sir William Gatacre; and the Eastern in Natal, at first under Sir George White, then under General Clery, and subsequently under the personal direction of Sir Redvers Buller.

To take them in the order named, Lord Methuen had the best, and indeed the only possible, country for military operations—vast plains com-

manded by high but stormable kopjes—positions admirable for defence, but capable of being turned by a sufficiently strong force, consisting largely of cavalry, mounted men, and horse artillery. Lord Methuen had none of these arms, or hardly any, and although his infantry at Belmont, at Graspan, and at Modder River, succeeded with considerable sacrifice in thrusting back the enemy, he had no means of pushing home the advantages won.

Much had been heard, more will probably be heard, of the disastrous attack on Magersfontein. Its failure probably had its origin in the notice given by the movements in broad daylight on the preceding afternoon.

But seeing the broken ground—in company with a gallant officer, Captain Barrow, whose last ride it was—intersected by dongas and every kind of pitfall, over which the Highland Brigade had to advance to the attack, on a pitch-dark night, without the slightest moon, it is quite conceivable that close formation was the only one in which the direction of attack could by any possibility be maintained. Whatever the cause, it is quite certain that the enemy were perfectly forewarned and ready. No one would undertake to dissect truth from invention in the multitude of current stories. One though is credited, that so well apprised were the Boers of the intention, that the leading company of the mass of quarter columns actually ran across a wire impediment, on the right flank of which was a lamp, and the overturning thereof was the signal for the fatal volleys which broke the closed ranks.

General French had quite a different country in which to operate. Much closer, with higher and more inaccessible hills. His great success, which, with the heroic defence of Mafeking, by Colonel Baden-Powell, stand out as the brightest pages of the war, was largely due to the considerable force of cavalry he had with him, and to the great use he put them to in ascertaining the movements of the enemy, keeping him always on the move, and being beforehand with him. Material advance in that direction was, however, almost impossible, and not the less because, although the greater portion of the entire railway line in Cape Colony had to be constantly patrolled, and the bridges and culverts guarded night and day by piquets and sentries owing to the disaffection of the Dutch population, those precautions were supremely necessary in the Nauwpoort and Colesberg district, the front of which occupied over 30 miles.

THE CENTRAL COLUMN.

Like difficulties beset Sir William Gatacre with the central column. He was moving in a district which might rise against him at any moment. He had a front of over 40 miles to protect from any Boer incursion, and if the attack on Stormberg was disastrous, it must be allowed to General Gatacre's credit that his vigilance saved an invasion of the Eastern provinces, which might have been fatal. The full facts concerning that woeful night march have yet to be ascertained. But this might be said at once, that it was no chance guide whom the General trusted to lead

him, but a sergeant of Police, of unimpeachable character, and having life-long experience of the district. It is probable that when the guide found himself to be out in his bearings he had not the courage to say so, but trusted to come across some landmark which would again put him in the right course. This result actually occurred, only of course the enemy had been perfectly informed of the movement by train and the contemplated attack. Needless to say, the story about the General shooting the guide with his own revolver is a pure invention.

NIGHT ATTACKS.

It does not appear from all one can ascertain as if these night, or rather early morning, attacks, are likely to be so successful as they have occasionally been in the Egyptian desert. They necessarily involve preparation which is of a very evident character. They cannot be undertaken unless the troops have coffee or something to eat, and the horses are fed before setting out. This entails preparation on the eve, the signs of which are very evident in the collection of wood for fires, and by positive orders given to many. The troops themselves know what is on foot, and sleep badly, while the silent march in the dark in an uncertain direction tries the nerves of the bravest. At any rate, it is clear that night attacks have not proved successful against an enemy always accustomed to be up before the break of day, and knowing an intricate country thoroughly. Very different might have been the result if the habits of the Boers had been more closely studied in the earlier as in the later stages, including their love of sleep after the evening meal, and dislike to close quarters. A movement shortly before midnight requires much less preparation than an early morning attack, and although it has the disadvantage of not having light for the actual onslaught, and precluding the use of artillery, it has in previous Boer wars proved useful, and particularly those waged against them by natives. Indeed, it is from Kaffir chiefs that the Boers acquired many of the artifices which have proved so useful to them in this war—the feigned retreat, the double flank attack, the closing of the horns of a crescent round the rear, the ambush, the lying still and hidden close to the enemy. The only wonder is that with equal opportunity of practical instruction we have been less apt and ready to learn. In support of the advantage of midnight over early morning attack there is the instance of General Hunter's sortie with the Volunteers from Ladysmith which proved singularly successful. To prevent the sleep, to break the sleep, of your enemy is usually worth while. Therein, perhaps, lies the great moral effect of torpedoes at sea. It is not less useful in bringing a criminal to justice.

CRITICISMS UPON GENERALS.

At the same time, it is quite impossible for anyone to criticise the actions of a General, unless actually upon the spot, and having before him all the topographical conditions, all the information the General possesses, not only as to the capacity of the forces at his disposal, but also of the

strength and intentions of the enemy, of the movements of co-operating columns, and of the ultimate plans of the Commander-in-Chief. Generals, it must be said, have not been hampered by home instructions, nor have they been interfered with by a press inclined to the intelligent anticipation of events, for the censorship has been as strict as that of the Third Section in St. Petersburg, and, it is said, sometimes placed in too often changing and inexperienced hands. But an unsatisfactory feature of the South African campaign has certainly been the very free criticism and denunciation of Generals by many under their command and by the public. It may or may not have been deserved in this instance or in that, but it certainly does not lead to satisfactory results, and has undoubtedly an untoward influence upon the Generals themselves, quick to perceive that they do not enjoy the confidence to which they are entitled.

Some say, however, there has perhaps been an excessive desire in high quarters to support Generals who have signally failed, and to maintain them in their commands when it is well known that the troops have lost faith in them. Colonels of regiments and Staff officers have in some cases been sent down, and it is claimed that the same measure ought to be meted out to their superiors.

THE COMMANDER-IN-CHIEF.

But whatever criticism may be brought to bear against any single individual for real or alleged errors of judgment, there is only praise and veneration for the Commander-in-Chief—Field-Marshal Lord Roberts.

His only son, earning the Victoria Cross in his heroic death, and sleeping the sleep of the soldier hard by the Chieveley Station on the Tugela, Lord Roberts did not hesitate at once to respond to the call of his Sovereign and his country. It would be impossible to imagine one of such supreme tact, such never-failing consideration of the feeling and aspirations of every branch of the Army, and every man in it. He thinks of everything himself, always does that which gives pleasure, and extracts the last ounce of devoted service from all. He can outride and outpace his staff and escort. Lord Roberts never tires, is never in a hurry, is never ruffled or excited. I arrived at Paardeberg from the Tugela and Sterkstroom—nearly 1,200 miles—of which over 150 by horse, buggy, and mule cart, 250 by sea, and the rest by rail, in the moment of victory, when an army was surrendering, and the conquered General was in the British camp. A more unpropitious moment could not be conceived for audience with a Commander-in-Chief, yet Lord Roberts sent for me, had plans and maps brought and talked under his wagon quietly, and unconcernedly, without the slightest press. And as he is himself, so is his staff. From Sir William Nicholson, the Military Secretary, and Colonel Neville Chamberlain, the Private Secretary, downwards, Lord Roberts has surrounded himself by a staff, Imperial almost in its dimensions and composition, but representative of all the best types of the Army and the nation. Needless to say that from Colonial troops as well as from South African, from Australasian and Canadian, he has evoked the most valuable service, putting them in the post of honour one after the other, and

preventing the rise of even the smallest ripple of jealousy in any portion of the Army.

THE CITY IMPERIAL VOLUNTEERS.

If, indeed, Lord Roberts has shown favour to one corps or one body over another, it is towards the City of London Imperial Volunteers, whom he has honoured by becoming their Honorary Colonel. He came down to the "Briton" to welcome their arrival as "invaluable comrades in arms." He inspected them himself. He addressed them in terms alike eloquent and historical, pleasing not less to themselves than to the Dutch, whom, under Elizabeth, said his Excellency, the Volunteers left England to succour in the Netherlands.

He sent the Mounted Infantry, under Colonel Cholmondeley, to the front so soon as they had got astride the horses purchased for them by the activity and judgment of Mr. Abe Bailey. They left Cape Town amid unequalled demonstrations of enthusiasm. At the engagement of Jacobsdal they covered the advance, and gained the praise of General Wavell, commanding the Brigade, and of all who saw them, by their dash and steadiness. Colonel Cholmondeley had his horse killed under him, and Bugler Pink, of the Queen's Westminsters, holding four horses, had three killed. Eighteen other horses were shot, for the led horses were a little too close to the firing line. The wounded sergeants and privates I saw in the several hospitals, and all doing well.

At the engagement at Paardeberg the City Imperial Volunteers held the eastern outpost line, and were assigned the honour of escorting General Cronje and the Boer prisoners thence to Modder River. Never was there smarter escort than that under Captain Waterlow, and well have the Imperial Volunteers earned the Free State Standard presented to them by Lord Roberts, from the Boer laager. The only trouble has been in keeping the Mounted Infantry Company together, so anxious have Generals been to secure, for their intelligence and bearing, C.I.V. troopers as orderlies. This has, however, enabled individuals to see and learn a great deal.

It should be mentioned that neither the individual position nor the financial backing of the City Imperial Volunteers have induced them to make their lot in the least different to that of the ordinary soldier. They share all his duties, all his hardships. Of turtle they have none. Indeed I confess to a passing thought that they were inflicting needlessly Spartan hardships upon themselves, and not making themselves as comfortable as Guards, Cavalry, or Rifles.

Not less deserving is the infantry battalion, under Lord Albemarle. It will have its chance—has doubtless had it. I saw them in their wind-blown desert camp at Orange River. I met them at Potfontein, coming back from detached duty, and bring to London their enthusiastic greeting.

At Green Point camp, when I sailed, was the battery of artillery under Major M'Miking. If the non-commissioned officers and men of the City Imperial Volunteers have no equals in the army in the field for

stature, for physique, for soldierly bearing, and for intelligence, there is certainly no battery which can compare with the horsing of that furnished mainly by the Honourable Artillery Company. The battery had the immense advantage I was anxious to secure for the other divisions, of being in barracks a fortnight before embarkation. It enabled all ranks to learn to know each other. It enabled discovery to be made of those who, although passing a medical examination not always so strict as it should be, soon showed themselves unfit for a campaign.

But taking all in all, the Lord Mayor and the City of London, as also the Metropolitan Volunteers and all the Volunteer Force, may be proud of the words of Lord Roberts, written from Modder River on 11th February: "I have no finer or keener material under my command than that which has been enrolled in the ranks of the City of London Imperial Volunteers."

THE COLONIAL VOLUNTEERS.

If the City of London, and the Volunteer Force of Great Britain have reason to be amply satisfied with their representatives, this is assuredly also the case of Cape Colony and Natal, of Canada and New South Wales, of New Zealand and Queensland, of Victoria, South Australia, and Western Australia. The Volunteer troops in the field number some 26,000, and it is not too much to say that the honours so far rest mainly with them. Many know the country, they can ride; and shoot, they can scout independently, and act together. They have eyes and ears, and, above all, heads.

It has been said that the reluctance of the War Office to have anything to do with Volunteer offers of help until the dark days of December, and until forced by the sharp edge of the national voice, was due to the fear in some old-fashioned minds that the British public would say, "Oh, if we can have so many Volunteers for active service when we want them, it is not worth while increasing the Regular Army."

Whether this is so or not, this war in South Africa has not only shown the unity and military strength of the Empire, but has proved the triumph of Volunteer forces. If no other result had been forthcoming, the war would nevertheless be rich in reward.

Where all have done so well, where the Imperial Light Horse, the South African Light Horse, the Natal Carabineers, Thorneycroft's Horse, Rimington's Scouts, where the Australians—converted in a minute from infantry to horse, on the chargers of Madras Lancers—where the New Zealanders have covered themselves with honour, and the Canadians advancing left hand on right wrist to the Boer trenches, brought about the great surrender on the anniversary of Majuba, it is invidious to discriminate between corps. But the interests of truth compel the statement that while South African laws fix the rate of pay of South African volunteers (and the members of South African corps have not all been South Africans), on mobilisation at 5s. a day, with 2s. 6d. if they find their own horse, and 2s. 6d. a day if they find their own rations, those of Greater Britain, Canada, and Australasia, only obtain the ordinary pay of the

soldier in the field—1s. 3d. a day. That is not sufficient. An enterprising German at Modder River sold Modder soda-water at 1s. a bottle (without the bottle), and tea at 1s. a cup. I gave 5s. for a pint of beer. These were about the prices at other stations where anything at all could be purchased, and such camps or stations were very few, and there was a strict order against selling drink to soldiers. May this enforced sobriety be permanent, and not be discouraged by hero-worshippers. I think, however, something might have been done in the way of a dry canteen for the troops, and the manufacture of aerated waters. It would probably have stopped some of the typhoid and dysentery which have been more deadly than lead.

THE REGULARS.

In this connection the Regulars claim attention. The regimental officer and the regimental soldier have done wonders. Their bravery, their endurance, their courage, have been that of Blenheim, of the Peninsula, of Waterloo, of the Crimea, of the Indian Mutiny. The race is the same. Its instincts are the same. Short service and young soldiers have come out triumphant. Where the officers have led, the men have followed. Their cheerfulness under the most trying circumstances has never been impaired. It might have been increased by more music and more song. "Those who sing on the march, march to victory," says Lord Wolseley. I have been in the open railway track through the long hours of the night, in the drenching rain, with men knowing me only as one of themselves, who stripped to warm a more sensitive comrade, succumbing to the cold. Their conversation and bearing were fit for any drawing-room. I have lost my way in the shades of night on the open veldt, close to the enemy's lines, and made common cause with one or two in like predicament, in a deserted Boer farm. Hour after hour my admiration of the soldiers of the Queen has increased. The country owes a debt to its soldiers, a debt it must pay, until those who stay at home, and who at home do nothing for the country, are driven to mend their ways for very honour, for very shame, and very livelihood.

THE NATAL ARMY.

I have been lured from my course. We were visiting the different armies. Lord Roberts, the Volunteer, and the Soldier arrested us.

Let us go to the Army of Natal. Bear in mind what I said before as to the configuration of the country, its Alpine character compared to the endless plains of Cape Colony.

There are some who say that the Natal campaign was unfortunate. I submit that it might have been infinitely worse. But for the opportune arrival in September and early October of the contingent from India, nothing could have kept the Boers out of Durban. As it was they came within thirteen miles of Pietermaritzburg, and the governor was within an ace of having to stand a siege in Fort Napier.

The entanglement of Ladysmith if it was an error, was not one of yesterday or the day before. Fifteen years ago it had been selected as the

most suitable *place d'armes*, the junction of the railway system, well watered, and suitable as a *dépôt* for corps operating towards, or resisting attack from, the Free State, the Transvaal, Zululand, or Portuguese territory. The idea of its being besieged had never been present. There appeared to be no forces in Africa for such an enterprise. It was largely stocked with munitions of war. Its abandonment was out of the question. It has been said that the true line was south of the Tugela. I should like more authoritative endorsement of that view. The northern bank is an impregnable fortress. The southern an open, a grassy, but a waterless plain. No description that I have read of the task before Sir Redvers Buller approaches the reality. His army lay upon that plain, its every movement under the eyes of the enemy securely hidden in the mountain fastnesses of the further shore. Not all the engineers of the armies in Europe could have improved upon that work of Nature. The steep slopes, the huge stones bringing the soldier often to his knees, defying cavalry, the top hog-backed for the mounting of artillery, the slopes protected by row upon row of trenches, the flanks guarded by mountains, one height commanding another, and as a moat in front of all a broad, swift, deep river, fordable only in one or two places, the fords dammed and crow-footed.

There was no hope of a frontal attack, there was no chance of a flank movement. A less persistent, a less enduring soldier than Sir Redvers Buller would have renounced the task as hopeless. It was discouraging to him and to his army. I was present at the commencement of the final attempt. Determination rather than hope was the prevailing sentiment. But the relief of Kimberley and the invasion of the Free State had disconcerted the enemy. On the morning of St. Valentine's Day the Boers saw the endless lines of a British army corps, 25,000 strong, marching—out to battle as unconcernedly—shall I say in some cases as carelessly?—as to an Aldershot field day. Far as the eye could reach in columns of attack, five miles across. More and more men in *khâki*, battery upon battery, more brigades, more regiments, more guns. One asked oneself would they never end, as looking back with field glasses and telescope new brown lines breasted the crest of the hills we had crossed. It was wise policy to parade them thus in face of an enemy whose spirit was already shaken. It was wise policy to hold them in hand in the burning heat, a heat one cannot describe, which made it impossible, heliographed General Lyttelton from the right flank, for troops to move, or for gunners to handle ammunition. The advance, therefore, was only slow and gradual, while water had to come twenty miles by train and five or more by bullock wagon. Hlangwane Hill was the objective. It seemed almost impossible of assault. The army moved on Hussar Hill as on a pivot. The Royal Welsh Fusiliers were in the front line. I had left them twenty-seven years before, and the rare fortune fell to me of going out with them again after this lapse of time. Colonel Charles Thorold, best of colonels, bravest of men, fell before Ladysmith was reached. Cingolo Mountain was occupied, then Monte Cristo, then Hlangwane, then Colenso, and after ten days' tedious but steady progress the road to Ladysmith was open

to Lord Dundonald, now so worthily promoted general, and the sore-pressed garrison with its two thousand sick—50 per cent. from typhoid and dysentery—in that circle of hills was relieved. It could have held out for just thirty days more. General French once had opportunity to take out his five regiments of cavalry. Superior orders forbade him. It was, perhaps, as well, useful as they would have been outside. Of the horses of those regiments, 83 had to go daily to the slaughter, 30 for meat, 33 for "Chevril," the invention of that genial, resourceful officer, Colonel Ward, D.A.G., of the Home District, which under the motto "Resurgam" mainly kept the garrison of Sir George White alive. We will give Ward fitting welcome at the next Tournament to which he lends his services at the Agricultural Hall. Ladysmith was possibly a theoretical mistake on our part. But it offered great attractions to the enemy, and but for his locking up his forces by its investment, worse troubles might have ensued.

DEFENCE OF LADYSMITH AND KIMBERLEY.

The defence of Ladysmith was noteworthy. No doubt Sir George White, not less accomplished than brave, did what he could. Seventy per cent. of the garrison were admitted to hospital during the four months' siege, and 169 officers and 3,163 men succumbed. Fifteen thousand shells were thrown into the invested area by four 94-pounders and twenty-nine long-range Boer guns, while the defenders could only fire 4,700 rounds from two 4.7 naval guns, three 12-pounder naval guns, and two howitzers. But the history of Ladysmith will have to account not only for Nicholson's Nek, but also for the inability of upwards of 13,000 British troops to cut their way out, or effectively to co-operate with the relieving army.

The defence of Kimberley—the Volunteer, the civilian defence of Kimberley for 124 days—is, however, much more remarkable. The area of defence was more extended—thirteen miles in circumference. There was but half a battalion of Regular troops, the Loyal North Lancashires, and a few artillerymen, about 500 in all. The artillery could only throw a 7-pound shell 3,000 yards, while the besiegers had 12- and 15-pounders, with a range of 4,000 or 5,000 yards. There was little ammunition. The civil population exceeded 40,000, and was composed of heterogeneous, if not turbulent, elements, including 10,000 Dutch and 10,000 Kaffir. It was by happy accident that Mr. Cecil Rhodes, never thinking a siege in the least probable, found himself invested. He was a tower of strength to the commandant, Colonel Kekewich, and to the beleaguered town. His large-hearted generosity was never used to greater advantage. His resourcefulness knew no bounds. He was the fountain of money and organisation; under his example and direction bomb-proof shelters were constructed in every direction. He sought no cover for himself and his party—a few sandbags on the roof, in the balcony, of the Santorium, and nothing more. He gave employment; his immense gardens—the work of a few years—furnished vegetable food, and prevented scurvy. De Beers workmen were kept on full pay constructing shells and

ammunition, and erecting search-lights. Volunteers, exceeding 4,000 in number, including 700 mounted men, were organised, and with such success was the line of outposts maintained, that at no place round their wide circle during all those four months did the enemy venture upon assault. Perhaps the scientific use made of dynamite, and the proclaimed intention to blow up redoubt after redoubt by electricity from the Conning Tower, where sat Colonel Kekewich, if the enemy met with any temporary success, had not a little to do with Boer forbearance. On the other hand, twice Major Scott Turner led a sortie—once taking a Boer redoubt, the other time losing his life. It is wonderful how little the town, greatly scattered, has suffered—perhaps a score of houses in all show what it has passed through, and the people looked (despite the reduction of food to a quarter of a pound of horse or mule flesh per adult, and two ounces for children), on their relief by General French, surprisingly well. This result is due not a little to the successful alimentary organisation of Major Gorle, of the Army Service Corps. The last few days were, however, the worst, when the Boer 100-pounder was kept going all day, and the women and children had to be placed in the 1,500-foot level of the Kimberley mine. The siege will be worthily commemorated to future generations by the statue of Mr. Rhodes the grateful besieged are going to place in the city square. In front of it will stand "Long Cecil," a remarkably perfect gun, throwing a 30-lb. projectile, constructed by Mr. George Labram, an American engineer, from designs found in an old book, without the slightest previous experience or any suitable machinery. It will call to mind the ingenuity of the American race, at one with us in this war, and mark the regret of the community that one so able was himself blown to pieces by a bursting shell within a few hours of the completion of his great work.

THE ENEMY.

It is time that we paid some attention to the enemy. President Kruger was right when he declared that the Boers would astonish us. They have proved a marvellously brave, tenacious foe, unlimited in their ingenuity and utilisation of all the devices of war. What have been their numbers? Agreement upon this matter will never be reached. British calculations were based upon the census of 1890, the Presidential election of 1893, and that of 1898—but the voters in these latter were only first-class burghers, descendants of those in the country before 1876. At best a census in a widely scattered, imperfectly organised community, is an untrustworthy guide. Even with us it is only approximative. Much more is this the case when the giving up of numbers is looked upon as a sure prelude to taxation and to military service. To the latter the Boers have never evinced the dislike they have to the rendering of tribute. The census showed 63,000 Boers, men, women, and children, say 80,000 allowing for the increase in nine years, of whom it would be an extravagant estimate to say that half were capable of bearing arms in a campaign.

How many would respond was an uncertain factor. Lord Salisbury once said that wars are now made by peoples and not by rulers. This was

eminently a war made by rulers and not by peoples. It was impossible then to forecast how peoples would support their leaders.

That the Orange Free State would deliberately sacrifice her freedom, her prosperity "one of the most prosperous territories in South Africa," says Mr. Robert Russell, the historian of Natal, and her independence, without the slightest reason or provocation, for the purpose of joining with the Transvaal, was a result no sane man in or out of South Africa would credit. The Free State had no complaint against us. We had none against it. True, that the treaty concluded by Mr. T. M. Reitz, now Transvaal State Secretary, when President of the Orange Free State, and President Kruger, at Potchefstroom on March 29th, 1889, was no secret. It provided for "abiding peace," and bound the contractants "to assist each other with all power and means whenever the independence of one of the two States shall be threatened or assailed from without, unless the State which has to render the assistance shall show the injustice of the cause of the other State." But President Steyn had shown an apparent desire for peace by inviting the Conference to Bloemfontein. He had indignantly repudiated in solemn message to the High Commissioner the suggestion that he might join with the Transvaal. There was no evidence of his military resources.

The natural inclination of our generals and military authorities suffering unexpected check was, and is, to magnify the strength of the enemy. This will continue to be the case, while the Boers, to make their achievements the more remarkable, will strive to diminish them. The probable truth is that the two Republics were able, together, to put 60,000 men into the field, a number brought up to 70,000 by commandeered Uitlanders, foreign mercenaries, rebels from Cape Colony, and natives, either voluntarily serving, or compelled to serve in some capacity or another. Major Albrecht (formerly a non-commissioned officer in the German Army), who has for 20 years been resident in the Free State, and who organised its artillery, has stated that at the battle of Colenso the Boers had not more than 13,000 men, and it has been affirmed that they never had more than 7,000 before Lord Methuen or between the First Division and Kimberley. Probably these numbers are understated. But I doubt if they are to any considerable extent. It is, however, perfectly certain that a certain number of Boers were moved from Modder River to Ladysmith and back again by the railways running from Bloemfontein to the trenches before Ladysmith, and even to the very base of Hlangwane Hill, as also from the north to Kamfersdam, whence the 100-pounder laid on a temporary branch to the top of a kopje, hammered Kimberley. We despised our enemy and suffered accordingly.

I repeat, however, that estimates of hostile numbers, as much on one side as on the other, are quite unreliable. What is perfectly certain is that insufficient strength was attributed to the extraordinary military positions the Boers were able to take up, and also to their fighting capacity.

Of all the hundreds of able soldiers who in recent years have gone by coach or rail from Cape Town to the Free State, from Maritzburg to

the Transvaal, not one seems to have noticed how difficult those great plains would be for infantry to traverse if the kopjes were held by a defending force with modern arms. Insufficient account was taken of the mobility of the enemy, and if the view was in part correct that infantry was the right arm for operations in Natal, it is difficult to understand how or by whom, Mr. Secretary Chamberlain was advised to ask for infantry from Canada and Australia, when replying to the magnificent offers of those Colonies. Perhaps the notion that horsemen cannot be improvised had something to say on the matter. It is one of the delusions the war has in part dispelled. Volunteers may not be expert or smart riders, but if they can get about on a pony it is something.

But we may presently consider this matter in connection with the British case, the British preparations upon which in Parliament and the country much has been and much more will be said. For the present let us confine our attention to the Boers and their plan of campaign.

Judged by the light of events it was undoubtedly erroneous. Four factors took the Boers to Natal, and it was for the British a providential decision. They were drawn thither in the first place by the presence of the Indian contingent; in the second by the strong sentiment attaching to their Great Trek to Natal—in which President Kruger as a boy of ten took part, and the dream of re-establishing at Maritzburg the Republic of Natalia, of gaining the sea, and the power to issue Letters of Marque. But in all probability the greatest determining influence of all was the confident belief that the Dutch in Cape Colony, or at least in the most Dutch districts thereof, would of themselves rise. It is not necessary in support of this theory to show the existence of any formal, any written, any organised conspiracy. There is ample proof of the sympathy of a very large proportion of the Dutch—even of the Dutch long loyal to the English Queen, in Cape Colony for the Boer cause. Cousins and even nearer kindred were burghers of one or other of the Republics. Not a few families had sons, or sons-in-law, or nephews, or grandsons fighting on both sides. To the Dutch loyal to Britain, Britain owes untold gratitude. It is a gratitude it may, I hope, be possible to recognise, and if by no other means at least by contrast to rebels.

I have made every endeavour to inform myself of the facts from the best Dutch as much as from other sources. Indeed, my action in that respect, although purely that of an individual responsible only to himself, created alarm in some circles in Cape Town, accustomed to state only one side of a case. And I do not hesitate to express the belief that Mr. Chamberlain was perfectly justified in saying that the British Empire had only just escaped one of the greatest dangers to which it has ever been subjected. I am convinced that had we been engaged in any other part of the world, with a great Power, British dominion in South Africa would have been wiped out.

For the avoidance of that danger we have to thank

LORD SALISBURY AND THE PARIS EXHIBITION.

I say Lord Salisbury, because had it not been (in the past tense, because the danger is now past, whatever may arise) for the extraordinary

skill with which, in the face of unparalleled difficulties in many quarters of the world, and with more nations than one, Lord Salisbury has succeeded in laying pending questions to temporary rest, we might have had great armies, and powerful navies to contend against at the same time.

I say the Paris Exhibition, because, although I do not believe that there is any serious hostility towards us on the part of the French people, as a whole, while the attitude of the French Government is perfectly correct, I do not think it would have been sufficiently strong to withstand the pressure of the noisy anti-English section, but for the rampart of the great—of the greatest—exhibition, to be opened next Saturday, and to which the whole French nation is committed, not only in millions of money, but by all that makes for prosperity.

Nor can sufficient acknowledgment be made to the German Emperor for His Imperial Majesty's visit to the Queen at a most important juncture, and even in the face of much ill-concealed dissatisfaction on the part of his own people. It served to show other nations besides the Boers that we were in agreement with that great Power, and materially to restrain accessions to the hostile ranks.

THE AFRIKANDER BOND.

There is no reason why, in the heat of racial conflict, we should forget the material services rendered to the cause of the Unity of the Empire by the Hon. Hendrick Jan Hofmeyr on more occasions than one. He was a representative of Cape Colony at the Imperial Conference in the Jubilee Year, 1887. He was a representative of Cape Colony at the Colonial Conference convened by the Dominion of Canada in 1894, and Mr. Hofmeyr himself proposed at Ottawa the resolution, which, being unanimously carried, led to the accomplishment of the first part of the work of the United Empire Trade League, namely, the abolition, in 1897, of the treaties precluding the establishment of preferential trading relations within the Empire.

The Afrikaner Bond, of which Mr. Hofmeyr is a leader, is, however, much blamed. It was founded in 1880, and is a political association, composed of 300 branches, sixty district committees, provincial committees, and a central committee, with 10,000 members, for the formation of a South African nationality by means of the union and co-operation of all who, whether by birth or by adoption, consider Africa as their home and its interests as their own. In 1883, the Farmers' Protection Association, representing the Country Party, in which Mr. Rhodes had been associated with Mr. Hofmeyr, amalgamated with it. Whatever the work of the Bond, there is little room to doubt that if the Republics, instead of sending their armies to Natal, instead of locking them up between two British forces before Ladysmith and before Kimberley in hopes, it may be, of capturing Mr. Rhodes and Dr. Jameson, had sent commandoes straight upon Cape Town, Cradock, and Queenstown, their forces would have been augmented like snowballs, and we should either have to content

ourselves with Simon's Bay, securing the coast from foreign aggression for the Dutch, as they planned, or have on our hands a gigantic, a terrible, if not indeed, an impossible task.

It was a clear and positive error of judgment on the part of the enemy, for which we may be most thankful. It probably had its origin in the boastful declarations of young sympathisers as to what they would do under certain contingencies. Rebels are rarely—if ever—to be relied upon, and in Poland, in Spain, in Ireland (although there are few or none there now), and in every Republic of South America, they have deceived those who had the idiocy to attach any belief to their promises. Indeed, they happily always contain a good proportion of those who are rebels only in outward speech for want of moral courage, and who jump at any opportunity of surrendering or betraying what they know to be a hopeless cause.

THE TRANSVAAL

undoubtedly astonished us by the numbers of the troops at the disposal of herself and her ally. But she astonished us even more by the excellence of her armament. That President Kruger was heavily arming was perfectly well known, and equally that the armament was directed against the British. It began on a considerable scale in 1893. In 1894 and 1895, £400,000 were spent on cannon in Austria and Germany. But the events of New Year's Eve, 1895, redoubled the orders. Vickers-Maxim Pom-Poms, Maxim batteries, Creusot Q.F. throwing eight shells a minute five miles, and Schneiders throwing shrapnel with 230 bullets, were ordered in considerable quantity. But how was it possible for us to enter any effective protest? We could not allege that the Republic had no enemies against its independence. The Jameson Raid was proof positive as to the contrary. The agitation in Johannesburg was evidence to the contrary. All through 1896 we were suitors at President Kruger's audience chamber—first, for the lives of Dr. Jameson, his officers, and men; secondly, for the lives of the arrested Committee of Johannesburg, whose injudicious leaders, pleading guilty to high treason, were condemned to death; then for the franchise and other things. The British Government was frustrated by the premature and senseless acts of its own subjects, arousing much feeling at home, and there was not a little suspicion that some of these sought to set up a British Republic at Pretoria for their own ends, rather than the British flag.

It is, however, idle to dwell needlessly upon the past, its blunders and vices, and weep over what might have been. It is the war with which we are concerned. Some amongst us have called out energetically for more vigorous action as regards

DELAGOA BAY.

Undoubtedly the larger portion of the armaments of the Transvaal were received through Delagoa Bay, and thence doubtless transferred in part to the Free State. It was not a matter over which, before the war, we

could exercise any material control. Delagoa Bay was discovered by the Portuguese four centuries ago, and has ever since been in their possession. It is the principal port of all that remains to them in South or East Africa of the discoveries of their great navigators, to whom the world will ever remain in lasting obligation. Portuguese East Africa comprises a territory half as large again as the United Kingdom. Delagoa Bay could not be treated separately. In 1823, Captain Owen, of the Royal Navy, obtained from native chiefs certain islands in the bay, and the river Espirita Santa became known as English River. The claim was never pressed, and no occupation ensued. But in 1852, when the Transvaal Republic was acknowledged, Captain Owen's claim was re-opened. A little diplomatic correspondence ensued, but nothing more done until 1861, when Captain Bickford planted the British flag and annexed the islands and the adjacent roadstead to Natal. The Portuguese protested, and a lengthy diplomatic correspondence ensued. In 1864 the Portuguese established or developed the fever-frequented town of Lourenço Marques, and in 1869 made a commercial treaty with the South African Republic. Thereupon Great Britain laid claim to the southern and eastern shores of Delagoa Bay, basing their action upon that of Captain Owen. In 1872 Mr. Gladstone's Government referred the matter to the arbitration of the French Republic. It was not a good choice, and, as might be expected, Marshal MacMahon, in 1875, gave his award against us—the Portuguese case being, moreover, far better and more carefully prepared than ours. Five months afterwards there was a fresh treaty between Portugal and the South African Republic, for the free interchange of products and free transit of many classes of goods, and others at a moderate duty, and in 1883 Portugal granted a concession for the railway from Pretoria, which has been the subject of recent arbitration in favour of the bondholders.

The Portuguese viewed with little favour the subsequent British advance into Matabeleland, and the agreement with Great Britain of 1890 was not ratified by the Cortes. On 14th November of that year there was a collision between the British South Africa Company's Police and the Portuguese, resulting in the defeat of the latter. This created great excitement in Lisbon, and volunteers demanded to be sent out. They arrived at Beira, and were totally defeated on 11th May, 1891. The Governments concerned at once hastened to sign, on 11th June, a treaty defining the British and Portuguese boundaries, and providing that in the event of either Power proposing to part with any territory south of the Zambesi, the other should have a preferential right to it.

I have recalled these facts as showing that the question of Delagoa Bay is by no means the simple one some people have asserted. Nor are there wanting other matters to be considered in this connection besides the feeling of an ancient race, whose ruler, under Philip II., was styled "Lord of the Conquest, Navigation, and Commerce of Ethiopia, Arabia, Persia, and India." Although the blockage of the Tagus would be quite possible—so far as any blockade is possible after the late Admiral Sir George Tryon's proof to the contrary—any interruption to our friendly relations with Portugal would be exceedingly inconvenient at a moment

when the seaway between Great Britain and South Africa was covered by our transports requiring coal at the Portuguese islands of Madeira and St. Vincent. Nor can we forget that the Queen of Portugal is a Princess of the House of France, and near akin to the Princes of Orleans, whose extreme Anglophobe opinions are well known, despite our hospitality for half a century to that exiled family.

Undoubtedly, what we have suffered during the war by the Delagoa Bay being used as a transit port for arms and men to the enemy, is as nothing compared to the international difficulties which might have been created by any offensive action as to Delagoa Bay, or even of overtures to purchase. Moreover, it is a trade which, with the rights of belligerents, command of the sea, and eight British men-of-war constantly in port, as well as under martial law in Natal, Her Majesty's officers have been able largely to control, and to render at least dangerous.

BOER TEACHING OF THE ART OF WAR.

But after all has been said, the Boers have taught us, and not us alone, but all the world military, valuable lessons in the art of war. They have shown :—

1. Extraordinary mobility.
2. Ingenuity in moving heavy ordnance to and from distant parts of the country, and to the summit of positions which would have been considered inaccessible.
3. Great command as much of artillery as of rifle fire.
4. The extreme value of entrenchments, and the power of ill-organised, undisciplined troops behind them, operating upon interior lines even against vastly superior numbers perfectly trained.
5. Scientific utilisation of cover.

It is worth while briefly to consider these characteristics on the part of the enemy.

1. As to *Mobility*.—There has been astonishing mobility, both strategically and tactically. We have positive proof that a certain number of the Boer forces, and especially the artillerymen under Major Albrecht, were transferred from Ladysmith to Kimberley and Colesberg and back again. We have seen Boer commandos moving sixty miles in a single night. The endurance of their half-starved horses knows no bounds. A single team took Colonel Young, the Red Cross Commissioner, and myself, ninety-eight miles over an awful country in fifteen road hours—not counting three outspans—and they shied at an ostrich the last mile. The Boer mobility is increased by absolute independence of food for themselves, or forage for their horses. A little billtong or dried meat, a blanket, and a little bush, and they are content. They want no great coats or tents. How different to ourselves! I counted over a hundred ox-wagons going out with great coats and comforts for two divisions bivouacking for a single night. True, Lord Kitchener cut down to the

smallest possible fraction the baggage of the outflanking column—no tents, no great coats, no blankets,—but still how enormous it inevitably was! The loss of the convoy meant the loss of over 300,000 rations. With six galloping mules it took me an hour to pass a convoy to Paardeberg.

Tactically, the mobility has not been less amazing. Now a kopje is apparently held in force with artillery and infantry. It draws the fire of all our batteries and rifles. There is no response. But are the guns silenced, as enthusiastic correspondents hasten to cable? No; they have only been moved to a secure place, while the infantry occupy, unobserved, trenches at the foot of the hill to sweep the advance at the right moment, and with a flat trajectory from rested rifles at marked distances. Now, while a carefully posted detachment holds the front and entices the advance into the zone of an enfilade from equally carefully posted rifles, hostile parties, small in number it may be, but effective, will threaten both flanks simultaneously, as well as the line of retreat. Not even the Brigade of Guards under that cheerful, brave, and adaptable General, Pole-Carew, could have moved companies and battalions from flank to flank with the ease and discipline shown by General Cronje. The Boers were discovered in full retreat by Lord Kitchener himself. He thereupon at once changed the march from north-west to due east, and directed his pursuit by General Kelly-Kenny (the first Inspector-General of Auxiliary Forces to command Volunteers in the field, and whose aide-de-camp, General Maurice, is your son, whose military career may I hope equal your own in distinction), and General Tucker, most popular and kindly of leaders. The forced marching of the infantry was magnificent—four miles an hour over rough veldt, fourteen miles without a drop of water in a burning sun. General Cronje had been deceived by a great camp left fluttering in the breeze before his lines, while the mass of the troops had been withdrawn in dead of night, moved to a secret point of concentration, and with other forces from south and east, led by forced marches on his communications. He had to fly at once, yet he fought a rear-guard action yard by yard, facing his commandos three-quarters about, while the right moved behind the firing line and took up position again on the left. And this notwithstanding the presence with the laager of women and children—yes, children! to the number of nearly one hundred. What could have been the object of exposing women and children to the horrors of camp and trench life, to the storms of lyddite and shrapnel? I cannot conceive. No family love can excuse it. It is horrible to think of. I should not have believed other evidence than my own eyes and ears, and could I not testify myself to the bitterness of the women. It is said some acted as loaders, and that others were dead shots.

The horses of the Boer mounted infantry are not awkwardly held by No. 3 of the sub-section. They dismount twenty or thirty men, and either leave them alone knee-haltered, or tied in a circle, or put them in charge of one man or one native. This is impossible with big British-fed British horses. It will be one of the difficulties with some of the fine horses of the Imperial Yeomanry. The Prince Imperial of France lost his most

precious life because his horse was too big and restive in mounting. Further, the Boers are very clever in keeping their horses out of fire. They are instruments of locomotion, and they do not run the risks we do with led horses.

2. *The Transport of Heavy Ordnance* has surprised all. Who could have foretold that even with a hundred yoke of oxen and thousands of pairs of arms working downhill on double windlasses fixed up the hill, the Boers could have moved guns of position to the great heights protecting the passage of the Tugela? Who could have imagined that between 12 noon and 7 p.m., on 15th February, they could have dismounted and moved away unseen by rail from Kamfersdam before Kimberley a 100-pounder gun, weighing between 10 and 20 tons? They thus prevented its capture and that of most of their siege ordnance by General French's relief column, of which they could not have had earlier notice. Our smart and mobile horse and field artillery were of course outranged. But for the Royal Navy, but for the perseverance of the officers and men of H.M. Fleet in outshipping thirty-five of their heavy guns, the Army would have been in a bad way. The land transport of this heavy ordnance was no easy matter, especially for the 6-inch guns from the "Terrible." But for the zeal and ingenuity of Captain Percy Scott, seconded by Mr. Reid and the Natal Railway workshops, it could not have been done. As to heavy ordnance, even more assistance might possibly have been rendered than was actually the case by the Royal Navy and Royal Marines to the Western as well as to the Eastern Army. The fault was not with those Services. Every officer, petty officer, seaman or marine in them was eager and ready to do anything, and the 1,100 who were allowed to go up to the Modder or the Tugela did magnificent and most gallant work. It is impossible to believe that there was any jealousy or dislike of the Army. Of course it is the business of an admiral to keep his fleet ready for any emergency. But if the War Office or the Admiralty tolerate for an instant in any individual, whatever his rank, any want of ready co-action with the sister Service, the country should hold their responsible Ministers to strict account. The armed forces of the Crown, whether afloat or ashore, whether Regular or Auxiliary, must be one in the service of the Empire.

3. *The Command of Artillery and Rifle Fire* possessed by the Boers has been amazing. While some of our batteries have run serious risks of being short of ammunition, in their desire, and that of Maxim gun sections, to make a noise, and riddle any trench or bush where the enemy might be, wholly irrespective of whether he was actually there, the Boer artillery fire has, as a rule, been intermittent. Ten minutes of the Vickers-Maxim Sheffield-made "Pom-Pom" and its demoralising effect, then a pause of an hour or two, and re-appearance on the same or on a fresh position. The Boer shells do not appear to have done great damage. Seven hundred shells thrown into Kimberley in the course of a fortnight killed one Kafir woman, wounded one man, hit one church, two public-houses, and a few other buildings, but otherwise did no harm. Major Albrecht says the same of our shells—"1,000 shells killed a dozen

and wounded forty." Of course, no one can obtain exact statistics, and no artillery officer will ever admit that his range-finder and his careful laying were ineffective. I can only say that more than once the most powerful naval telescope on a tripod showed no sign of that commotion in the enemy's trench where a British shell fell, which is almost unavoidable if it had done much work; and the opinion that ten minutes of rifle fire disables more than ten hours of artillery, is one which, if authentic, as I believe it to be, demands careful consideration. It will not be difficult of approximate proof by our hospital returns.

But whether accurate or not, the Boer command of their rifle fire has been far superior to all the sections in our drill-books devoted to fire discipline, to all the close study of our generals, colonels, and captains, to the words of command of section leaders—to all the praise of the simultaneity of a volley. As if it mattered one scrap whether twenty rifles went off on the word of an officer or sergeant behind them who can see next to nothing, unless he stands up to be killed, compared to the twenty bullets hitting twenty different men. As if any marksmen, however expert, could keep his sight aligned on the object, and his forefinger on the trigger, whilst the section leader behind was counting four, and often double or treble that, on the most approved Hythe method. One might as well shoot pheasants and partridges by volleys by command of the head keeper or loader. It is not given to the human heart to stand such suspense.

Nor have the Boers limited their marksmen to a pouchful of cartridges. Their trenches show that an entire boxful has been at the disposal of the occupants of this or that rifle pit, and yet each man has held his fire until he could fire with some effect at something definite, an officer standing up, an officer using his field glasses, a general, or colonel, or adjutant, or staff officer moving about, a moving kilt, a pair of white or brown calves blistering in the sun, showing the back of a khaki-clad man, a helmet over a stone or ant-hill. Nor were volleys and incessant fire not forthcoming at an advance in mass, a battery, battalion, a regiment or serried column of route, or in the favourite formation nicknamed "awaiting shell."

An exception, however, there has often been to this Boer restraint and this individual aim. British infantry are advancing the other side of that hill or slope. They are located by Boer scouts concealed in dongas. They are out of sight and out of range. But no matter. Rest the lower joint of your thumb upon the top of the backsight, align the foresight and fire. You will annoy the advancing infantry, you will hit some. You will make an intermittent noise of bullets. Where in the world do they come from? There is not a man to be seen, not a single puff of smoke, not the slightest report of a rifle. The use of the "thumb sight" by the enemy has been very irritating, even at 3,000 or 4,500 yards. That gallant Highland commander Colonel Dick Cunyngham was killed by a bullet at over 3,000 yards distance, and yet our War Office on 16th February "will not trouble" the inventor of a high-angle rifle-sight costing a shilling. It is this bureaucratic obstinacy which the nation has to fight as the curse of the country.

The fourth matter for note is the great use made of rifle pits, entrenchments, and barbed wire entanglements. Often these trenches have been rough and rude of construction, often quite shallow and flat, showing no earth in front, invisible at 1,000 yards, just sheltering the recumbent riflemen, and no more. Often deep pits, with a cave or hollow at the bottom—for, *horribile dictu*, a woman or a child, or for the rifleman it may be, to creep into until danger from that whizzing shell is past. They have never before been seen in war, and were a revelation to all at Paardeberg. Unless the shell bursts in the pit itself—and the chances against that are ten thousand to one—no damage is done. The labour of the Boers in constructing trenches has been perfectly marvellous; they never seem to tire. At dusk that hill is clear; at dawn a treble row of trenches bars the advance. How different to our people! Islandwhana, Majuba, and many instances show the difficulty of getting them even to laager, or throw up any protection. A field gun emplacement, a shelter trench thrown up by infantry in the German manner, if occupation is but for an hour, is practically unknown. I have often kept the most powerful glass constantly to my eyes to discover a German battery in manœuvre, so artfully is every gun hidden by straw, grass, or earth, according to the surrounding ground. On the Tugela the naval and other guns were left absolutely in the open for weeks and days in some cases, for hours in others, and even while well in range with shells falling close around. The Artillery may not like this, but I have a note of place, date, and hour. What entrenching has saved the Boers, what it has cost us, casualty returns show only too clearly, albeit they are, of course, far more applicable to defence than attack.

But close akin to the part entrenchments have played in the campaign is the fifth point—

THE SCIENTIFIC USE OF COVER.

Only by such means is any advance now possible against an enemy in position with modern weapons. The highest authority in the German Army has said to me, "If the men are encouraged to take cover, you will never get them out of it to face Maxim fire." It is an opinion which I venture to think will have to be modified, or there will be none to stand shoulder to shoulder in the "parade march" preceding the charge.

The grief of the nation is great at the loss of over 250 officers, besides 2,400 sergeants and privates killed in action, or died of wounds in this war, besides 150 officers and 3,600 men missing and prisoners. It is not that the men have clung to cover too tenaciously, and had to be drawn out of it by the orders and example of the officers. True, that the war shows that any economy in officers is a false economy; that the modern weapons necessitate more scientific, more courageous leading than ever. The loss lies, however, in great measure, at the door of the officers themselves. It is a magnificent national characteristic which no other nation can equal. It is one only to be admired, to be worshipped, to be encouraged, never to be condemned. The fear of being thought to shirk is a factor. The desire for distinction is a great one; but needless

exposure is suicide, and unfair to the Queen, the country, and the Army. Many are the instances—names could be given; but why give pain to those longing for that life to come back?—of a general, of a colonel, of a captain, or subaltern, deliberately leaving cover, deliberately standing up, deliberately going to the top of a hill “to have a look,” deliberately walking across a front, with no particular object in view, save, perhaps, a word with a comrade. The life has gone, and probably taken others with it.

But for scientific use of cover, the Boer has proved himself *facile princeps*.

When the Army comes home, you will be surprised to find how few members of it have ever seen a Boer, save with a flag of truce (it may be improperly used), or as a prisoner. I did not meet half-a-dozen officers in all Sir Redvers Buller's army who saw one at the battle of Colenso. Nor is it only in defence that the Boer has been marvellous in taking cover. Writing of the attack on Ladysmith, the special correspondent of the *Standard* says:—“As usual, it was impossible to see the Boers, so cleverly did they take cover among the stones. But their presence was made known by a continuous shower of lead, some of which did mischief at 3,000 yards. Our men are slowly adapting themselves to this game of ‘hide and shoot.’” The bullets come, they find their billets; but what is there to fire at in return? Not a man to be seen. A tiny enclosure or grove in a trench or on the top of a rifle pit. A stone. Yet behind it is a Boer rifleman. When he fires he does not stand up to fire by the word of command of a blind or blinded section leader, does not show a helmet over the top, does not place his shining barrel along the upper surface. It lies along the side. The right shoulder and right eye and left knuckles are only exposed for a second or two. The stone still shelters the rest of the head. There is no smoke.

Small wonder that under such circumstances few Boers are to be seen—that their loss has been comparatively small. “Seven killed” is the official record for the battle of Colenso. The commander of the Dutch artillery put it at 36 killed and 70 wounded. But, whatever it was, the total, I fear, was very short of ours—158 killed and 765 wounded, besides 224 missing. Again, in moving from position to position, as in attack, there is no Boer mass to be seen. Single files or double files at twenty paces intervals, individual movement, “scatter boys,” and rendezvous at a certain point—one mile, two miles, twenty miles away. See that battery of Royal Artillery moving along the front of our position. See that infantry column in close order. The general-in-chief is in despair, but says it is hopeless to try and correct during a battle such incessant mistakes. Nor are army, divisional, and brigade staffs always themselves free from blame. I have in my mind one hill tenanted by general, brigadier, C.R.E., C.R.A., and escort, in the most approved Aldershot “pow-wow” manner. “The troops can go home,” says he in authority. Six hundred yards of retirement was done by the last squadron, when from that very hill came volley after volley, emptying ten saddles in fewer seconds. Granting to the Boers more than double our mobility, then

they were not 1,500 yards away, carefully concealed all the while, close to the hill.

Why did they hold their fire? Why not *terrasser* generals with one volley? Because the numbers of the enemy were few and unsupported, and the reconnaissance was strong in all arms.

THE BOER WEAKNESS.

But if there be prudence and the wisdom of the serpent in clinging to trenches, to kopjes, to dongas, and to cover, it is a virtue easy to be carried into a vice. This is so of the Boers. However arbitrary their generals, however persuasive their commandants and field cornets, they could once only be persuaded to assume the offensive. The experiment was not one to be repeated. It was at Ladysmith on 6th January—a most gallant effort of the Harrismith Free State commando, under Commandants de Villiers and Van Wyck. They took off their boots, they assaulted two flanks simultaneously and noiselessly in blackest night. They completely surprised the British pickets and were all but successful—indeed they were only expelled from the positions won after 17 hours desperate fighting, by the glorious courage of British officers and men—too many of whom fell never to rise again—Lord Ava, Digby Jones of the Engineers, and Hunt Grubbe of the Manchesters. The Imperial Light Horse had the colonel, two majors, and four officers *hors de combat*. The only officer of the Devons who escaped was Colonel Pack, who led them. But if before Kimberley in the early days of the siege it had been otherwise, success would have been difficult to resist.

THE LESSONS OF THE WAR.

What are the lessons of the war as read by ourselves? I will not dwell upon those at home, although they are deep—the disjunction of the armed forces of the Crown, the treating of Army, Militia, Yeomanry, and Volunteers as separate and rival bodies; the want of preparation, the melancholy condition of inland defence—Great Britain left without guns, without ammunition, without cavalry, without any of the essentials for defence.

But what of those read at Dundee, at Elands Laagte, at Rietfontein, at Nicholson's Nek, at Colenso, at Spearman's Camp, at Spion Kop, at Hlangwane, at Ladysmith? what of those read at Belmont, at Graspan, at Modder River, at Magersfontein, at Enslin, at Klip Drift, at Paardeberg, at Kimberley, at Bloemfontein Water-Works?

They must not be lost in the pæan of honour and glory in which the troops will soon return. We must profit by the experience of the war. The key-note has been sounded by Sir Redvers Buller himself. "I suppose our officers will some day learn the *value of scouting*, but at present our men always seem to blunder into the very midst of the enemy."

They cannot learn the value of scouting unless the opportunity is afforded them. It is not to be done by a vast number of men, brigades

as strong as divisions, in a confined space. It is not to be done in a short parade in a morning's work. No cavalry has greater dash than the British. No cavalry officers are such good horsemen, straight riders, or brave men. Were it otherwise, the three brigades of horse and eight batteries of horse artillery, under General French, could not have done that hundred-mile march to the relief of Kimberley in 96 hours—could not have done those five miles at a gallop from Klip Drift which entirely disconcerted the enemy. But why so many complaints by Generals of the scouting work? It is for the cavalry to answer. The advance of an invading army is strewn with dead horses and dead oxen, with trains of sick and wounded jolting painfully to the base. Alas, too, there are shattered reputations of brave leaders as milestones. It will be an evil day for England if the *jeunesse dorée* is turned away from the cavalry because the training is too thorough, the work is too hard and too trying; yet the cavalry must become more of a profession.

Some have thought that the day of cavalry was over. Field-marshal have chosen it as a theme for post-prandial oratory. But this war has shown, as did that of 1870, that the day of cavalry is now, and has still to come, not, it may be, of charging cavalry with sword and lance, but of mounted infantry, capable of quick movement on horses easy to mount, and of foot work in the fire zone.

This war has shown more than ever that the battle is to the swift as distinguished from the impetuous. It is a strategical race for the best positions, a tactical race for a change of front, for flank movement, for lines of supply and communications, and then victory is to the patient and the cautious, the troops using their arms and long-range weapons with greatest effect and least risk. This war has shown that every ounce you put upon the soldier's back is a drawback. He must be in a position to move quickly, quicker than his adversary, whether on his feet, by horse, or in wagon. *The Equipment* needs revision. You cannot fasten a soldier's body round about with straps and impedimenta which a comrade must fix. You cannot give him an equipment depending upon counterpoise—pouches that have to be kept in place by the counterweight of the great-coat, betraying the small of his back 1,000 yards away to the enemy—as a Boer commandant showed me, a great-coat requiring ball cartridges to keep the belt in place. Yet of such is our Slade-Wallace. A kit bag holds three times as much, but of course must be carried by the transport and can only be available in camps standing for some days. What is wanted for marching columns is a light but warm brown waterproof, and a light woollen "combination" garment for night.

A bandolier presents many advantages over pouches—a slouch hat over helmets. Indeed the latter, except for India, are the worst form of head-dress imaginable—hideous in themselves, a water-spout in rain, difficult to shoot in, a specific to give headache.

Then again, the *day of the sword is done* save as an emblem. It is doubtful if a sword in this campaign has ever inflicted a wound upon anyone save upon the hips and legs of the wearer, or the flank of a horse. It

was quickly recognised as a sort of legend, "Here, I am an officer, shoot me," and laid aside, with colours and other relics of the past. Are not kilts to go with grey horses? Highland losses have been too heavy. But there must be some means by which an officer can be distinguished by those he leads. Khâki has been a great success, but Stohwaser gaiters are much better than putties, and far easier to put on. The boots have been a great improvement on those in the Soudan, but no one pair of boots would stand such work in such a country.

"Our Tommies are splendid fellows, but I wish to God they could shoot better." This was the observation of a loyal and experienced colonist as a train-load of brave men went by. It contains but too much truth. The nation must, before it is too late, endeavour to teach its youth to shoot—as a compulsory branch of education. It is as important as any subject of the Seventh Standard. Drill and musketry, as Dr. Warre, leader of headmasters, has declared, must become national, as in Natal, must become compulsory at Eton, Harrow, and Westminster, at Oxford, and Cambridge, and Dublin, if we are to avoid forced military service. Rifle practice must be brought within reach of every cottage, says the Prime Minister. The choice is before us. No man can think, despite the Hague Conference and the aspirations of the Tsar, that the day of war is over, or that this generation of Britons will not see a great foreign effort to stay the march of their Empire.

Nor can the *question of armament* escape revision. There are many who declare that the Mauser rifle has proved far superior to the Lee-Metford. It may be, though, only a matter of the carpenter, not the tool. The Mauser revolver is certainly better. The regulation weapon is antediluvian, and warranted to be perfectly safe in anybody's hand, save by accident or at point-blank range. Moreover, our officers and sergeants of the Regular Army are not, as a rule, taught revolver shooting, as are those of some Volunteer corps.

The calibre and range of our artillery will also command close scrutiny. It is alleged that it is inferior to that of foreign nations, because Woolwich will make for itself, and is slow to move, and won't trouble about new inventions. But in this connection it will have to be weighed whether there is not a danger to be avoided in excessively powerful field guns carrying beyond any power of natural or artificial vision. At least two instances are substantiated of our own artillery mistaking at long distance our own troops for the enemy, and being responsible through this accident for the loss of valuable lives. Again, it missed an opportunity of inflicting crushing loss upon the enemy in the Boer flight from Dundee, because it feared our own people were in close pursuit.

Again, *tactics and formations* will have to be revised—the close order is done. Seven years ago at Aldershot I started with a provisional battalion a "creeping" advance in column of attack. It was not approved. It was made the subject of good-humoured caricature. The army in the field is to-day being taught it.

But after all is said and done, the greatest lesson on the war is

THE ARMED STRENGTH OF THE BRITISH EMPIRE.

The map given my name by Messrs. Keith Johnston & Co., and on the walls of nearly every school in the Empire, carries this legend:—

“The British Defensive Power is represented by 500 ships of war, and 2,000,000 soldiers, sailors, and volunteers, but most of all by the patriotism and union, the brotherly affection and mutual confidence of all races, classes, parties, and peoples in every part of the Empire, and the unswerving loyalty of each single individual to the common whole, the common good, and the one constitutional Sovereign.”

It is not in excess of the truth. Who could have thought six months ago that we should have 220,000 troops, with 40,000 horsemen, in the field? If Lord Wolseley had ventured on such a prophecy, critics would have torn him to ribands. Who could have imagined that 94 per cent. of the Reservists would come to the colours? Who could have forecast the enthusiasm of the whole country, of the Militia, of the Volunteers, of the Yeomanry, that dukes would have left their palaces, lawyers the tribunal, brokers the Exchange, tradesmen their counters, workmen their homes, and husbands their wives, for the war, most eager for the front, and still less that Greater Britain would vie with Greater Britain to send the most troops, the best troops, in the shortest possible space of time. The General Staff in Berlin, the État-Major in France, have found all their calculations erroneous.

President Kruger took the Army List, President Steyn listened to false counsellors, and between them they came to the conclusion that Great Britain could perhaps put 50,000 men against them, and these, they were convinced, and perhaps rightly, they could drive into the sea, if they reached the coast beforehand. The Presidents have been mistaken; we have surprised ourselves; we have surprised the world, and it has been worth the discovery.

There are some people who blame the Government for insufficient preparation for a war they wanted to avoid, they hoped to avoid. These are the very persons who said at the end of last September they could see no reason for military preparations. Now they say we should have punctuated despatches with army corps. It is indeed marvellous that we have sent 220,000 troops, and all their arms, ammunition, and stores in British ships, 200 in number, with a burden of a million tons, over 6,000 miles by sea, between 20 and 30 days on the ocean, and three hundred leagues by land, with only two or three mishaps. Such a work reflects the greatest credit upon the War Department, upon the Admiralty, upon the mercantile marine, upon the heads of the railways. Where is the Power which could accomplish, which could attempt, such an undertaking? Then would you blame *The Intelligence Department*? I will allow that military officers are bad detectives, that they may not get the most out of an informant. But—

Information is a commodity, like boots or clothing. If you want it you must pay for it. When 22 years ago I went to Scotland Yard, they

said you must get information of coming murder, plot, and robbery, but it must be all for love of serving the public. Stuff and nonsense. When I want a thing I buy it.

We pay little for information—one ten-thousandth part of the budget for all the departments of the State. What does that mean for the Army? A few hundred pounds, and for that you are going to know everything concerning the Armies and armaments of every Power in the world, for we are coterminous with them all. It is absurd.

But I am much surprised if there were wanting reports concerning the enterprise before us in South Africa, which, in the result, have shown themselves to be fairly accurate. It is one thing to write reports. I have spent half my life in writing them. It is another to get them believed or acted upon. Colonel Stoffel told Napoleon III. the exact state of affairs as regards the German Army compared to the French. He was not believed. He was set down as an enthusiast led away by the *genus loci*. Has there been no British "Colonel Stoffel" in our case? But the fact is none of us, or few of us, believe except what we wish to believe. This is so in commercial business. As Her Majesty's Consul at Grand Canary truly writes:—"From personal observation I believe that British consular reports are made more use of by our commercial competitors, especially Germans, than by our own countrymen, for whose sole benefit they are supposed to be written." It is so in affairs of State. An instance is averred against a general officer early in the war, who refused to believe his own outposts that the enemy was advancing in force, until a shell in the middle of the camp brought home the truth. But even if a military officer had been sent to the Transvaal to collect information, what would have been his opinion of the *personnel* of the Boer Army? Thrice the 4,000 prisoners of Paardeberg passed before me. Old men and boys—men of middle age and youths carrying blankets and kettles, coffee cups and teapots, in any and every dress, presenting no trace of homogeneity, possessing no single outward attribute which would appraise them at all as a fighting, an ordered, a disciplined unit; albeit they seemed to be suffering in no way physically from a siege in the bend of a river—a place where a less skilful general than Cronje, where less brave men could not have held out for a day. To whom would our emissary have looked for information beyond the range of his observation—from the Dutch or from the English?

He would have most certainly gone to Mr. Rhodes, who knows the country better than anyone, who had been in high office, head of the Progressive Party, who is a Privy Councillor, and the most patriotic of Britons; with great wealth, yet moving among the people, with limitless command of information and its equivalent.

In July, August, and September of last year, Mr. Rhodes would have said—he did say—"There will be no war; the Boers will not fight, they will give way if you are firm, if they stand they will not prove formidable."

This was the language the foremost man in South Africa held in public; this was the language he held in private, to his friends, supporters,

and colleagues in the Legislature and Commerce. He held it still in the early days of October. And is your Intelligence Department, administered by military officers, likely to have got better information than either Mr. Rhodes, or the leaders of Johannesburg, or the Civil Service Club in Cape Town, that forum of South African polemics? I care not for the prophets wise after the event. What I say is, there was not one, or hardly one, who gave the slightest indication of what would probably come to pass, what did happen. Imagine the position of a British officer in a mess—general or subaltern—who ventured to traverse the boastful newspaper headlines of the easy task before us. At Johannesburg, at Cape Town, at Durban, he would have been an object of pity. In the Carlton Club I had that hardihood, and it was so much resented that it was more prudent to change the subject. "They won't have anything to do with your Volunteers," sharply said a high official. It is not fair then to blame the Intelligence Department, although incontestably in England, as in France, it is capable of much improvement. To saddle it, for instance, with the preparation of maps at home and in the field is absurd. Naval and military information is one thing, and map-drawing is another. Some can speak languages, some can draw maps, but the sciences are quite different.

POLITICAL CONSIDERATIONS

do not happily come within the purview of the Institution. I will, therefore, only say that they are the most difficult to touch upon. Study of the state of affairs in South Africa, independently of the political element, is impossible. Moreover, peace is in sight. The war has been difficult. But the peace, at least a permanent peace, is even more so. The hands of Sir Alfred Milner are, however, capable, and he knows the problem to be dealt with.

It is certain that nothing will satisfy the Imperialists of South Africa but the complete razing of what Mr. Chamberlain has termed the citadel of sedition and ferment. It is due to those who have fallen, it is due to those who are bearing the cost, to take every precaution that such a war shall never again be forced upon us, that Dutch national feeling shall never again be so well armed. Lord Salisbury has written:—"Her Majesty's Government are not prepared to assent to the independence of either the South African Republic or the Orange Free State." That is final. It is due to the patriotic co-operation, however, of Canada and Australasia to make them—to make Greater Britain—parties to the final settlement. It is due to a million Kaffirs, to a million Zulus, to half-a-million Basutos, to a quarter-of-a-million Swazis, all of whom, although not employed in active operations, looked upon the British triumph as essential to their own welfare. There could be no clearer tribute to the justice of our cause. But how the hundred millions sterling the war must cost are to be recovered from the offending territories; how they are to be administered, whether as a whole, as some recommend, or as two; what proportion of their lands can be given to Natal in compensation for occupation and devastation, are problems it would be unwise here to examine too closely.

But may I venture upon a respectful appeal to the South African League, to the Progressive or Imperial Party in Cape Colony, to the leaders of thought in Johannesburg and Kimberley, not to aggravate the difficulties of the situation, not to encourage, nay to repress, any excess of language or action, to restrain by every means in their power all mob excesses, and everything which may make a lasting peace more difficult of attainment, having regard to all the local circumstances of race and population within the borders of Cape Colony itself. Lord Roberts, great soldier as he is, has shown an admirable example of moderation and conciliation, which all may follow.

My task is done. I have endeavoured to set out the result of personal study, tempered by the experience of the most experienced. If in any point I have ventured upon criticism or suggestion, it is less that of an individual than the collective voice of others more competent. I am too well aware that whatever aptitude there may be for weighing information, the South African problem, and not less the military one, is not within the short range of any individual. I can at most hope to have contributed something to knowledge, and to have given some food for thought to the thoughtful.

AFTER THE WAR.

There can be no doubt that the peace, and more especially if it be a peace which, while it will prevent any possible further outbreak of disturbances in our generation, will not implant excessive hatred and bitterness in its train, will open to South Africa a great era of development. The attention of all the Empire, of all the world, has been vividly drawn to the great continent. The future will not hang like a cloud upon all transactions. It will attract men and money. It will attract energy and enterprise. The mineral resources, the gold, the diamonds, the coal, which give such evidence of existence from Delagoa Bay to Walfisch Bay, from Durban to Buluwayo, will be worked. Many fortunes will be made; many will be lost. There will be many openings, but this must be borne in mind, that the ordinary agricultural emigrant, burdened with wife, children, and household cares, must think twice and thrice before he embarks upon a land which, so far as can be at present seen, offers far more prospect to the celibate urban than to the rural settler. I can say nothing, however, about the Transvaal or about Rhodesia. But let us all hope that the future may be "Advance South Africa" under the British flag, which has won and made it.

Major-General C. H. OWEN (late R.A.):—I must apologise for opening the discussion to-day, but having to leave early, General Maurice was kind enough to call upon me to speak first. I will try and be as short as I can, as I daresay there are a great many other speakers more worth hearing than myself. I had not the advantage of hearing this paper read by Sir Howard Vincent, but I have read it over carefully, and I shall confine what I have to say merely to one or two points. Sir Howard Vincent says:—"As to heavy ordnance, even more assistance might possibly have been rendered than was actually the case by the Royal Navy and Royal Marines to the Western as well as to the Eastern Army. The fault was not with those Services. Every officer, petty officer, seaman or marine in

them was eager and ready to do anything, and the 1,100 who were allowed to go up to the Modder or the Tugela did magnificent and most gallant work." Sir Howard goes on to say:—"It is impossible to believe that there was any jealousy or dislike of the Army." Now, I confess I do not quite see what this means, whether there was any unwillingness on the part of the artillery or the naval Service; but what I wish to point out is, that there was a very large and important part of our Service, the garrison artillery, which at that time had not apparently been employed in the operations. Now, I will ask these questions: Should not this Service be employed for the defence of our Colonies? Ought not a strong force of garrison artillery, with proper guns, of course, to have been sent into Natal two or three years before the outbreak of this war? Ought not Pietermaritzburg to have been defended properly with fortress guns, and a number of position guns in store, so as to send up to Ladysmith, or any other place at which they might be required, and to be ready for their defence? The naval guns, as we know, got in just in the nick of time; a day longer, and the railway would have been blocked. Where should we have been then? The naval guns saved the situation; but why should we run such risks when we had garrison artillery and plenty of guns that might have been on the spot? Then, in consequence of this deficiency the Boers could, with the greatest ease, if they had had, I was going to say the pluck, but I will say the dash, have rushed down to Pietermaritzburg, and it would have been at their mercy after Sir George White had been shut up. 5,000 or 6,000 Boers going down to Pietermaritzburg, which was totally undefended, would have caused the most terrible confusion, and we should have had to begin again from Durban. I do not see myself that the War Office is responsible for this; the responsibility lay, I should think, with the military and the civil authorities at the Cape. We knew, from the Intelligence Department, that the Boers had purchased a large number of heavy guns, very formidable guns, and they had a trained body of men from Germany and other places to work those guns. They had railways, plenty of horses, and it was perfectly evident to anybody who knew anything at all about the question that the first thing they would do would be to invade Natal. It has been argued that until Ladysmith was shut up we could not have foreseen anything of this sort. I do not think so at all. We have had a great deal of criticism on the field artillery, but the fact has been forgotten that our field artillery was pitted against the garrison and siege artillery, which the Boers brought down by means of their railways. The second point I wish to refer to is this, Sir Howard Vincent says:—"The opinion that ten minutes of rifle fire disables more than ten hours of artillery, is one which, if authentic, as I believe it to be, demands careful consideration. It will not be difficult of approximate proof by our hospital returns." Well, I think this is a very rash opinion, and it is evidently shared by Sir William MacCormac, because he says that hospital experience confirmed the ineffectiveness of artillery fire to destroy life, and he instances the small amount of damage done to Kimberley and Ladysmith by the artillery fire of the Boers. I thought I had done something to demolish this idea of the relative damage done by artillery and infantry fire in the old lecture hall of this Institution in 1889, when I read a paper on "The Value of Artillery in the Field"; and this point has also been pretty exhaustively treated by our gallant Chairman, General Maurice, in a book he published in 1891. When we come to consider this question, there are a good many things which show that hospital experience is not of the smallest use. A good many of the wounds and the damage caused by artillery do not send men to the hospital; it knocks them over at once, and kills them outright. I have seen men wounded, dashed to pieces and their heads taken off. And besides the killing of men, you must remember that artillery does a great deal of damage to guns, carriages, horses, bullocks, ammunition wagons, temporary magazines, etc. There is another thing to be considered, which General Maurice laid stress upon; and that is, that if you have a heavy fire upon the enemy they will take care to keep out of the way of it

—they will not stand the fire of artillery. As to the effects of the fire of field artillery during the campaign, it is evident that they have been far more apparent in the Free State than in Natal. In the latter, strong entrenched positions have had to be attacked. What is the good of attacking strong entrenched positions with field guns? And I should like to know what could be done against such positions by musketry. It is equally true that the Boers did a great deal of damage by musketry against us, but that is a different point. Taking the Natal campaign, the field artillery did great damage and plenty of execution at Elands Laagte; and in the attack on Pieter's Hill, when Sir Redvers Buller had got hold of commanding ground on which to put his guns, and bring a very heavy cross or enfilading fire on the Boer positions, our shrapnel did very heavy damage in such cases. I pointed out in November last the mistake we made some years ago—I do not know who is responsible for it—in doing away with common shell. We should have had common shell with our field guns. But you must remember we had one of the most powerful field guns—the most powerful, I should say, as regards its shell—that has yet been used, in the 5-inch howitzer, which throws a shell of 50 lbs. There has been, in our Service, a great prejudice against it; I do not know why, and until two or three years ago there were only three howitzer batteries out of ninety-two field batteries. We want more common shell fire. Shrapnel is only of use in the open or when cross or enfilade fire can be obtained. Take the shrapnel fire of field guns under Lord Roberts and you will find they have done a tremendous amount of execution. The Boers nick-named them "hell-scrappers," which shows they do not like them. If you have watched carefully the accounts of the operations you will see they have done a fair amount of execution.

Colonel Sir HOWARD VINCENT :—Common shell or shrapnel?

Major-General OWEN :—Shrapnel. Then again, as to the effect upon us in these hospital returns. At Spion Kop, a great deal of the damage, if not most of the damage, to our troops was done by artillery fire—much of it shrapnel. They got the proper range there—about 2,000 yards. The number of men afterwards brought into hospital—I have seen it stated over and over again—wounded in the most frightful way by shells, was very great. Then again, you must remember there has been a great reason for our suffering so much from rifle fire, because there have been front attacks, marching slap up to trenches. What can artillery do there? The men defending them managed to plunge a good many thousand bullets into the unfortunate people attacking them. That has nothing to do with the relative power of artillery and infantry. There is another thing I will mention. The officers of the British Army do what is the right thing: they always lead their men. But they have been very rash in this war. Men stood up over and over again and thus became marks for fire, and we have lost a great number of officers from that cause. Sir William MacCormac instances, as I have said, the few casualties in Kimberley and Ladysmith. This cannot have surprised anybody who understands anything about the matter. The Boers seem quite ignorant of the proper way of disposing guns for bombardment. They seem to drag their guns about into all sorts of positions, some of them favourable and some of them not; and they blaze away at all kinds of things. They did not in bombarding concentrate their fire. With four months' firing at Ladysmith with these improved guns, some of the positions at Ladysmith ought to have been made untenable and ready for assault; and at Kimberley the same; the Boers do not understand how to use their artillery, and in addition to that, a great deal of their fire was ineffective because their shells did not burst. There is another thing which is very important to remember. The public are very much exercised because we do not fire at from 8,000 to 10,000 yards. What is the good of firing at from 8,000 to 10,000 yards? How much is that? From $4\frac{1}{2}$ to $6\frac{1}{2}$ miles. They say we have not got telescopes. I should like to see anybody with a telescope tell what a shell is doing even at 7,000 yards. I have had as much practice as most people in artillery—I am an old gentleman, and

have retired some years ago, and so perhaps my opinion is not worth anything—but I have been under fire for a considerable time, and I am supposed to know something about it. And I say it is perfectly impossible to make accurate practice at such distances. The Boer guns were probably well laid, and made fair practice; but you want a shell to pitch within five yards, and a good number of shells pitching one after the other into the same place. Therefore I think these great ranges have been utterly useless, and I hope, for Heaven's sake, we shall not copy them. We know that the Boers, with some of the guns they took from us at the Tugela, and some other guns, dug a hole in the ground and fired the guns at an angle of 45° . I think any officer would not mind standing anywhere at 7,000 yards, and would not have much chance of being hit by that sort of practice. What did we accomplish in one day's firing at the bombardment of Sebastopol? Considering what we did then with smooth-bore guns, what ought we not to do with the powerful rifled guns we have now? In the first day's bombardment, after the French had been silenced, which they were very early in the day—they got their batteries into wrong positions—after the fleet had retired, the whole brunt came on our English guns; and you can read Todleben's account if you like, for he confirms entirely everything I am saying now. With eight guns disabled, we knocked the Malakoff and Redan into ruins, and dismounted thirty guns. There were only five gunners left in the Redan, and the whole place was a scene of carnage, and the guns and carriages, and everything else, were shattered about in confusion. As to the fire on us, I remember a shot knocking a leading horse of an ammunition wagon off its legs, passing through the stomach of the wheeler, and going on as if nothing had happened. I have been in the same battery twice when magazines were blown up. In one case seven guns were silenced out of eight. We found only three toes of one man who had been blown up with the magazine, and he certainly would not have been found in hospital. The value of artillery depends on whether you use it properly; whether you use the guns you have got, and use them for the purposes intended. What I think we have lost sight of is this. We have siege guns, position guns, field batteries, mountain artillery, and machine guns. If they are taken in that order, siege guns should overpower position guns, position guns overpower field guns, and so on. Let us remember there are those classes. I do not find in any official returns any position guns mentioned at all. We shall have to overhaul our artillery after the war, I have no doubt. The critics are persistently telling us to remember what was done in the war of 1870. I think we should do very much better to follow the precedents of what occurred in many of our own wars and the American War. The war of 1870 was quite a different thing to anything we are ever likely to encounter. There was not a single position there that was defended as we should have to defend it now. There were fortresses like Strasburg to besiege, but no entrenched positions. Take Sedan, the mere pounding by artillery of an army confined in a pit, the casualties were mostly due to artillery there, of course. But I think what I stated three or four years ago was this, and I do not see that I have any reason to go back upon it; the tactics of 1870 will require a good many modifications, in consequence of the introduction of smokeless powder, magazine rifles, and the greatly increased power of artillery, due to the improvement in shrapnel fire, and that of common shell having bursting charges of high-explosive powder. I do not believe there is an officer in the Army in Africa who has ever before been under heavy artillery fire. They have to learn all this. A certain number of older ones may have been under some kind of artillery fire, but we have been so long engaging enemies who have no artillery that will give anything like effective power, that we have acquired a wrong idea of the effects of artillery fire. I think critics, correspondents, and Members of Parliament should reserve their opinions on this matter (artillery fire) until the conclusion of the war; describing things they have seen is, of course, very useful, but reserve all these sort of wild opinions in

technical matters, which are going about and doing a great deal of harm. There was a discussion in the daily papers some four months ago, in which was stated some of the greatest nonsense I have ever heard in my life. One man proposes that lyddite should be put in shrapnel; another was not satisfied because twenty rounds were not fired from a field gun in a minute, and the range was not that of a siege gun. Some of the Members of Parliament know a great deal about this subject, and they are quite right to have their say. For instance, men like Sir C. Dilke, Mr. Arnold-Forster, or Sir Bevan Edwards, who was a great loss when he left the House, know a good deal about these matters. But I think most of you will agree with me in saying that it is a great pity to ventilate all kinds of notions until the war is over and we see whether they will hold their ground.

The Right Hon. Sir CHARLES W. DILKE, Bart., M.P. :—The last speaker has told us that we ought to reserve our opinion, and not to pronounce general judgment at the present time, and I am one of those who share very strongly that view. But at the same time we must all of us do what lies in our power to prevent any risk—and there is a real risk—of the lessons of the present war being lost at the time of what we hope will be the successful termination of the war, in a sort of general and, in some part, undeserved self-congratulation. There is a real danger, I am sure, of that; and anything that Sir Howard Vincent can do, and has done, and anything that others, who have seen something of the war, can do to prevent that coming about, will be of real national service. We, none of us—neither rash civilians, nor soldiers who, because more experienced, are more timid in criticism—can venture now to pronounce anything like a personal opinion on any point submitted to us; but there are certain lessons already, the moral of which we can begin to draw, and that is what, I think, Sir Howard Vincent has invited us to do. This is the right place to do it, because, at all events, the Royal United Service Institution can claim credit for having been almost the only scene in this country, with the exception of technical bodies like the Artillery schools and others—I mean the only scene in past years of that sort of politico-military criticism of the chances of future war—that this country has exhibited at all. And if the lessons which have been drawn in this hall in past times had been attended to, many difficulties that we have got into would not have occurred on the present occasion. We have had a synopsis circulated of the order in which it is proposed that the subjects arising out of the paper should be discussed here to-day, and it is very far from my wish to go through the whole of the heads, or anything like the whole of the heads, in that synopsis. It would take, indeed, a very long time to do so. I only propose to allude to some of them—beginning, perhaps, with the sixth. The latter heads are the more important because they are more general. The earlier ones are on rather technical and comparatively narrow points. The sixth question concerns “The regimental soldier: his pay in the field. Is it sufficient?” That is a matter which is prominently brought before us by the present war, because almost for the first time in the course of the military operations of this country has there been such an enormous discrepancy between the pay given to one private soldier and another private soldier. In the present war where our own men would get about 1s. 3d., many of the Colonists are getting as much as 6s. 3d. a day. That fact brings before us at the present moment the pay of a British soldier as illustrated by the present war. All I think it is possible to add to what Sir Howard Vincent has said upon that point is, that in order to prevent a feeling of irritation and great difficulties arising in the future, we clearly ought to insist for the very high pay on getting a higher standard than that which we get from the ordinary soldier. I am convinced that even without going to the Colonies or even in addition to going to the Colonies, that in this country, at pay anything like so high as the New Zealand trooper is getting, 1s. 3d. from us and 5s. from his own country, which is 6s. 3d. a day in all, you could raise a very fine body of men with a specially high standard. Not men like some of the Yeomanry who

can only shoot or can only ride, but men who can both shoot and ride, and look after themselves, which is the greatest thing of all—men who, without belonging to the gipsy class, have the same power of hardiness in sleeping out and in providing for themselves, that the ordinary Surrey tent-dwellers have. That is what is wanting in the British soldier. He is largely a town boy; he has been accustomed to be provided for all his life, and he has not got the resource of looking after himself, which is so important in campaigning of the kind we are engaged in now. For anything like 6s. 3d. a day we ought to be able to raise in this country mounted infantry who can ride and shoot and who would be able to look after themselves in this way. The lecturer has spoken of the South Africans as getting 5s. a day, and the men from Great Britain, from Canada, and Australasia, only obtaining the ordinary pay of the soldier in the field. South Africans get 5s. from us; our men get 1s. 3d. from us, and the same scale is given to the Australians, but they get a great deal from home. I have seen the arrangement which was made with the New Zealand troopers. The men know they get 5s. from New Zealand sources as well as their 1s. 3d. from us. I turn now to No. 8, a very important heading in the synopsis, "The Enemy." In the first place, I would allude to page 627 of the lecture. Sir Howard Vincent has said—and this connects itself with some of the latter numbers in the synopsis—that the Boers have taught us valuable lessons in the art of war. The first remark I would make upon that is, that unfortunately the Boers taught us, for those who were willing to learn, very much the same lessons on a smaller scale in 1881 that they have taught us now. It is an undoubted fact, which is, of course, familiar to you, Sir, that many officers, especially those whose attention has been drawn to the subject by serving in South Africa, have been for years past preaching the very doctrines which now everybody is preaching on the text of the present war. The course of the war in 1881, on a small scale, was very similar to the course which has been followed by the present war on a large scale. Potchefstroom played the same part in that war that Ladysmith has played in this war. It was the successive attempts, which were actual attempts to relieve the investment of Potchefstroom, which led to all the calamities in that war which have been repeated on a large scale in the present war. Colonel Ian Hamilton, who was at Majuba, and Colonel Spence, I think, employed under Sir William Butler, and many other officers had, before this war began, drawn very much the same lessons we are all drawing now from the present war. One of those lessons on which Sir Howard Vincent has laid great stress is the extreme value of entrenchment and the power of ill-organised, undisciplined troops behind them, even as against superior numbers. In one passage with regard to the arm which you represent, I think, Sir, to-day, and which is represented by other distinguished officers here, viz., the artillery, he makes the statement that they have repeatedly during the war and in his presence long remained under heavy fire without the smallest attempt to protect the guns by artificial means. That is a matter to which great attention has been called in recent years in Germany and other countries, and one would have thought that that was not likely to have happened again at the present time. In the synopsis we have an allusion to the numbers of the enemy. I do not find any very detailed statement upon that subject in Sir Howard Vincent's paper, but he does say that the Transvaal astonished us by the numbers of the troops at the disposal of herself and her ally. I am afraid we must not flatter ourselves that the numbers in the field against us in this war have been anything like so large as newspaper correspondents and even generals make out. I doubt whether the Intelligence Department would allow that their estimate before the war has been exceeded at all. This is a war in which some day we shall know the exact facts. It is not like dealing with Dervishes: we are dealing with a people who keep careful records, and we shall know some day the records of every man who has fought against us in the field. I very much doubt if we shall be able to show then that the numbers given by the Intelligence Department have been exceeded. It is the extraordinary military

ability of the Boers in their own particular style of fighting which has led to a very exaggerated idea of the numbers opposed to us in particular engagements. Speaking of the ability of our enemies, Sir Howard Vincent attaches importance, as we all do, to the power of moving heavy ordnance about, which they have illustrated by the fact that they have been able to make rapid retreats without our being able to capture their guns. Here, again, this Royal United Service Institution is not to be blamed. Attention has been called in this room in past years, as it has been called by the Artillery body at Woolwich, to the fact that the Germans have for some years past been experimenting in this direction, that they have succeeded with great effect in bringing position artillery into the field at their manœuvres and moving it rapidly about. It occupied an intermediate position between siege artillery and field artillery of a highly mobile type. Then the lecturer attaches importance to distant fire with high-angle sights, and he rather complains of our Government for having neglected inventions upon that subject. There can be no doubt at all that distant fire is very effective when you have thoroughly trained shots dealing with the rifle. When our present rifle in its first form—not in its most recent improved form—and with its first ammunition, which was considered extremely defective and withdrawn—when that first rifle reached India I was present at the first trial which it received (in the Pishin Valley), and there picked shots from two battalions, firing at an unknown range, which proved to be about 2,300 and 2,400 yards, made most admirable practice with this rifle, although it was, of course, not sighted for anything approaching that range. They were firing by what might be called guess-work. There is no doubt picked shots can do those things, and in facing an enemy of picked shots, like the Boers, we are exposed to effective fire at enormous ranges. It is a very different thing to expect to teach the ordinary private in the whole battalion to reach any level of shooting which will enable firing at a great distance to be effective in the hands of large bodies of men. Under the same heading, No. 8 in the synopsis, and under a sentence, part of which I have already read to the meeting, but which I should like to return to, Sir Howard Vincent tells us that the enemy have been operating upon interior lines, and, no doubt, we are glad to find any reason for explaining the very considerable reverses, or great troubles, that we have recently got into. At the same time, during the most recent operations of all in the campaign, it appears to me that to some extent we may be said to have been operating on interior lines, because one of the most remarkable facts that has recently occurred has been that the Boers have shown extraordinary mobility by going round us on two occasions in a circle, while we have been, as it were, in the centre of the half-circle round which they have been moving. On that occasion the advantage of the interior lines appears to have been locally upon our side. When we come to 9—"The Lessons of the War"—we find one main reason touched upon, which, I suppose, is generally given to account, especially in these most recent operations of which I have just spoken, for our non-success, or for the non-completeness of our success. Sir Howard Vincent alludes there to certain "blundering into the midst of the enemy," "cavalry more a profession," and the importance of mounted infantry. On page 613 in his lecture I find allusion to the fact that Lord Methuen had not sufficient cavalry, horse artillery, or mounted infantry in any of his operations, and that even where he won a temporary success he had no means of pushing home his advantages, and that he was driven to frontal attack, as contrasted with turning movements of any kind. On another page the lecturer again endorses that view, and alludes to the commencement of the war—to our having refused to accept mounted infantry at that time from the Colonies, and preferred infantry; and he discusses the question of whether men who can get about on ponies are not better for the purposes of the present war than ordinary infantry soldiers in many instances. He also discusses at page 634 the question of how far our cavalry has hitherto been a professional service, and how far from that point of view it can be improved. Now, I imagine that there can be no doubt that we have been short for one

reason or another—the responsibility, of course, being a matter which we cannot yet finally allot; but we have been short of cavalry and horse artillery during this war; we have been short, in its early stages, of mounted infantry, and we have been short of horse and mule transport and of a sufficient number of horses for our movements. There can be no doubt also, I take it, that it is universally admitted that the war has shown a defect in scouting and the obtaining of information in advance of attacks, and that no one pretends that it is otherwise. That these things have been to a considerable extent foreseen by those who do give their attention to the subject is, I think, a demonstrable fact. But, unfortunately, that foresight has been confined to individuals here and there, and has not spread generally throughout the Army and throughout those responsible for the Army, and for the preparation of the Army for the present war. In the synopsis we are invited to discuss the equipment of the British soldier. One lesson which I think has been taught by the war is the inferiority of the carbine for mounted men. It is very doubtful, in the opinion, I think, of all who have watched the proceedings in South Africa, judging from all the letters that I have seen from there, whether the carbine can be considered of any use—whether the full-sized rifle with the same sighting and the same distance of range as the ordinary rifle should not now be substituted for all purposes for troops that carry a firearm at all. For professional cavalry, in the highest sense of the word, it is very doubtful whether the firearm is a useful weapon, and, to my mind, it is one of the lessons to be drawn from this war that we must more than ever distinguish in our minds between the cavalry use of cavalry without firearms and the mounted infantry who are infantrymen conveyed from place to place, infantry soldiers bearing a proper rifle and able to fight against infantry. The carbine seems to please no one, and has been ineffective in the present war. We are asked, towards the end of this paper, to discuss a large and more important subject. The whole question, indeed, under 13, of the Armed Strength of the British Empire, which is alluded to in the closing portions of Sir Howard Vincent's paper, is too large a question for me to go into here to-day. It is too large a question for the country to go into at the present moment, as illustrated by the present war, except so far as to keep certain points before us and on record. If I were asked to discuss Sir Howard Vincent's paper upon those heads, I should myself complain that they are too one-sided. A too purely Army view is taken of the problem of defence, where he says, for instance, that Great Britain has been left without guns, without ammunition, without cavalry, without any of the essentials of defence; because it is impossible to consider problems of that sort without taking into consideration the position and proper duties of the British Navy. But, as I say, those are matters too large to be discussed to-day. Personally I have a great objection, which I have frequently stated in the House of Commons, to military preparations at home which are of a merely defensive character. I doubt altogether the wisdom of spending money on the Royal Reserve battalions tied to home service only. I believe all the energy of the country, in a military sense, should be devoted to the creating of a striking army, which can be sent abroad if necessary. Sir Howard Vincent, while he may be accused of pessimism in portions of his paper, gives some figures towards the end which are open to the charge of optimism. He quotes from a map which he says bears his name, figures of two million soldiers, sailors, and Volunteers, which constitute the armed strength of the British Empire. I hope that no one will be tempted, by the fact that the Boers are an armed people, to believe that some men upon paper, or even men for whom you have muskets and gun-powder, constitute an army upon which we can in any sense rely. We have not, in any proper military sense of the word, anything like two millions of men in the whole of our Empire put together. In order to arrive at such figures you must count the whole of the Canadian Militia—not the 30,000 men of their organised Militia—but the whole of their nominal Militia on paper, and those are forces upon which it would be idle for us to reckon. They are mere potential forces

on which we can draw as a reserve. As Sir Howard Vincent points out, we are drawing in this country on our Colonial Reserve in that sense of the word. The Empire has been able to draw even more largely on the Colonies in the past than on this occasion. We drew upon them to an enormous extent in our wars with the French in North America, and the siege of Louisberg is a case in point. These are potential reserves. What we want is to be able to count on an army organised beforehand, which can be used suddenly and at a pinch. We want something organised and ready, and in that case we have nothing like two millions of men, or anything of the kind. Then Sir Howard Vincent turns to the Intelligence Department, of which I will say nothing, except that no well-founded attacks appear to me to be made upon that department, so far as I have seen at the present time, and he deals with what he calls prophecies before and after the event. What I have said with regard to the prophecies of certain men is, I think, worth illustrating, because it will cause this Institution in the future to listen perhaps to some of their skilled men on their own subjects with even greater attention than that with which they have been listened to in the past, when you find that these men are able, from their scientific study of the subject, to tell you beforehand what is going to occur, while it is still a closed book to the general public. I ventured some time ago to state in the House of Commons that at the end of January and beginning of February the war up to that time had confirmed skilled prevision of what was likely to be its character, startling though it had been to the general public. I based that statement very largely upon a lecture and discussion which had taken place at Malta—a lecture delivered by Colonel Spence. The lecture was delivered in June of last year before the war was thought of. In February Colonel Spence delivered a second lecture, and there again was a debate on the subject in Malta in a body similar to this—an offshoot of this body—where exactly the same skilled prevision was shown as before, and which has been again confirmed. To show you how completely these things may be seen beforehand—it is, of course, familiar to you, Sir, and familiar to many in this room, but it is not familiar to the large body of the public—this lecture was delivered at Malta, with five or six gentlemen taking part in the discussion, and everything that has subsequently occurred was thought out in advance and prophesied for us. After alluding to the way in which the Boers were allowed to select for themselves the field of campaign in Natal, and showing how their selection of their own field of campaign and one most favourable to their arms had helped them in this war, as it helped them in 1881, Colonel Spence alludes to the configuration of the country, which he points out in detail, and says that it gives General Joubert the opportunity of practising the most recent strategical principles lately enunciated by the Germans. He points out the class of movements which were subsequently observed, and he says the whole of our risk of failure on the Modder River side depends on the lack of cavalry. He then points out how we failed to carry out the original plan of penetrating into the heart of the Orange Free State from the north of Cape Colony. He states what was the evidence to the general public of the existence of the plan of campaign in the number of horses which had been collected and the places at which they had been put; and then he says that the necessary number of transport animals for the ultimate movement had not been collected. A general advance could not be made, the result of want of transport; “no mounted force of sufficient value; no manœuvring power; no turning movements possible”; and he points out it would be desirable for the purpose of overcoming these evils to collect a force of at least 20,000 mounted men. That is exactly what has since been done. And yet in February that was laid down by Colonel Spence in Malta. There was a very interesting debate which took place on the reading of that paper. Colonel Spence ended by saying that the ultimate movement through the Free State would be a war of communications—the enemy tearing up the lines of rail, making the supply of the army a constant anxiety on a line of 350 miles long in the Free State alone. He said they would threaten our

rear to force us to attack them (exactly what has occurred). In the debate Sir Francis Grenfell, who occupied the position you, Sir, occupy to-day—he was in the Chair—alluded to letters he had received already in February from distinguished officers in the field, showing the insufficiency of the transport for them to make earlier movements than they have made, and the total want of transport at that time to carry out turning movements. As I say, it is too soon altogether to allot responsibility. I think that these facts go to show us that there is reason to believe that there has been deficiency in the supply of sufficient mounted men and sufficient horses for transport all along, and that is the main cause of the difficulties which have occurred. I repeat, as I began, that I agree with the last speaker, it is too soon for any of us to attempt to pronounce anything like a final judgment on these subjects. In thanking Sir Howard Vincent for his paper—a very useful paper, and, in a sense, a paper to make people think on these subjects—our object ought to be to help guard against doing that of which there is a great risk, viz., letting the successful termination of the war be a signal for general congratulation and for the forgetting all about the lessons we ought to have learnt.

Captain W. H. JAMES (late R.E.):—I think, Sir, we are all agreed on one point, that is, that the evidence we have at present before us, and the fact that the war is still going on, is one reason why we should hold our comments before we write down any criticism against the generals who are concerned in the operation. I agree with Sir Charles Dilke on another point, that it would be very wrong if at the end of the war, in the general congratulations which will be given to everybody, and the shower of honours and medals and stars which will fall broad-cast over the whole of the huge forces, if indiscriminate praise be given, and blame not properly given to those to whom blame is due. It would be a great mistake both for the nation and the British Army. Even at the present moment I would say there is one little instance, a very concrete one, in which we have all got a right to know that which we do not know at present, that is, the Koorn Spruit disaster. I think there is one lesson also to be drawn if the military side is to be criticised. I am a little inclined to think there is a civilian side to this war. I am not at all certain that our present machinery for constructing the British Army and conducting it, whether at home or in the field, is quite what it should be if the nation means to have the work properly done. There are indications in the present conduct of this war which show that our War Office machinery is distinctly old-fashioned and obsolete, and certainly not adapted to conducting the war in the way it should be conducted. I will not say much with regard to one point that has excited a great deal of attention. There is not the very faintest doubt that no one believed in war against the Boers, but I think the reason for that is very easy to put one's hand upon at once. It was a fact that the people in Natal, and the people in the Cape, and the Administration of those two Colonies, did not believe in war themselves. I think there is not the slightest doubt of that. They believed that the Boers at the last moment would cave in, and that influenced the preparations which were being made at home. I was glad to see that the last speaker stood up for the Intelligence Department. The Intelligence Department have had rather a rough time from the expressed opinions of ignorant people, but not from those who really know and are capable of judging the questions at issue. The controversy that took place in the *Times* with regard to the artillery was so childish that it was almost impossible to ask any man who knew anything at all about the question to take part in it. It culminated in a letter sent home by a correspondent, containing statements with regard to guns more fearfully wild than were ever before put into type. The attack on the Intelligence Department was chiefly with regard to two points, one, the number of the Boers—and I unhesitatingly say they were right and the correspondents were wrong—and the other with regard to the maps. If we are going to entrust the Intelligence Department with the construction of maps for every possible theatre of war in which the British Army is likely to take part, we shall

have to begin at once by allowing them several millions a year for the purpose. A map is no good for military purposes unless drawn on a fairly large scale, and showing accurately the detailed points. For strategical purposes perhaps you do not want so large a scale; but to draw a map on any scale whatever which would be of real and great utility to the officers engaged in this war, that is to say, one which would have shown them accurately the character of the ground over which they were to operate, would have been so costly a proceeding that it is idle to think any British Government or Colonial Government could undertake the preparation of it. It is ridiculous to make an indictment against the Intelligence Department because their maps have not shown the country with that accuracy which one finds in the map say of France to the scale of $\frac{1}{100000}$. Sir Howard Vincent has called attention to a point which wants to be well rubbed in, and that is, that if you want intelligence you have got to pay for it. What he practically tells us is this, what a good many of us I daresay know, that the total sum for secret service money is £10,000. I should like to know how much of that goes to the Intelligence Department—a precious small portion, I think. It is impossible to work an Intelligence Department except on the principles on which the foreign Intelligence Departments are carried out. If we are prepared to do that we shall have the intelligence, but if we are not, do not blame the Intelligence Department, which is provided with men equal in intellect to any men in the world, but which is hampered by the paltry sums allowed to it. There is one point which comes out very strongly in this war, and that is the use of railways. We all know at the present moment that it would be impossible for Lord Roberts's force to continue its march to the Vaal and on to Pretoria at any pace whatever, were it not for the railway which enables him to supply it. I will give you some statistics here which will show what we have been doing. It is a fairly well-known thing that the Germans consider that on a single line of railway you can pass twenty-four trains a day. I am glad to tell you that our administrators in South Africa have succeeded in passing thirty-nine per diem, from Norval's Pont to Bloemfontein, which shows that our Railway Department—organised by a number of officers, some of whom had very little previous railway experience, but who brought common-sense to bear on the matter—is able to do its work very well. With regard to the rifles, it has been said that our Lee-Enfield is an inferior weapon to the Mauser. I do not really think there is much to choose between the two, except in one point, and that is, the fact that the Mauser loads five cartridges at a time, whereas we only load one. I know we have a magazine with ten rounds, but the magazine ten rounds are not to be used until the supreme moment. If we were engaged in attacking the chairman, the lecturer, and the secretary, up there on the platform, we should all have our ideas as to when that supreme moment came; afterwards we should, if we were armed with the British rifle, be reduced to a single loader. I daresay a good many of you know that I have taken up this subject of rifles, and I have for years and years tried to get the Government to introduce the clip loader. I believe at last, taught by experience in South Africa, they are going to do it. But the rifle of the future is not in the hands of any Army at the present moment; the rifle of the future is an automatic rifle, which merely requires you to pull the trigger, like the Mauser pistol, and you fire your shot and reload your rifle. I have no doubt that will come about. The automatic rifle is an arm of the future, and the Army who first adopts that will have a weapon which will give it enormous advantage over those who still adhere to the ordinary magazine rifle. The question of artillery is one I should like to say a few words upon. Our artillery has been attacked, as I said at the beginning of my remarks, chiefly by people who do not know what they are talking about. My old friend General Owen said that the position gun necessarily snuffed out the field gun, and the field gun the mounted gun, but that has not been the opinion of the man in the street. He has believed in a sort of Jack-of-all-trades weapon, which was at one time to beat the position gun, and another time to be as mobile as the field gun. If the gentleman in question would design a weapon of that sort which did not

burst, he would no doubt be a very great inventor; but certainly as far as we know, humanly speaking, it is impossible to do what the gentlemen who were so fluent in letters to the *Times* demanded from the gun constructors. I think we have learned one thing. We have been a little inclined to sacrifice to mobility the need of a heavy shell. A good many officers may remember that some years ago, when the re-armament of the artillery with the breech-loader was discussed, it was proposed to have a 20-pounder for that field artillery. I do not think this gun ever got beyond the experimental stage, and personally I think it is a pity it did not. Take the nations of Europe at the present time. The Russians have a large proportion of 28-pounders with their Army, which are very formidable weapons, firing heavy shell, and experience has shown us ever since guns were used that the effect to be derived from a heavy gun is very much greater than can be derived from a combination of smaller guns, even if the sum of their weights of their projectiles in a given time make up the weight of that fired from the one big gun. I am inclined to think that the heavy gun will be the gun of the future. Whether it will take the form of the howitzer, or whether we shall deal in a more drastic way with the question of mobility—we have seen 4·7 guns moving about very freely in this war—is a point I leave artillery officers to decide; but I am quite sure that in future, to make up for the increasing value of rifle fire, we shall have to adopt technical measures which will increase the value of artillery fire. People say the artillery does the frightening, and the rifle does the killing. It may or may not be true, but no human being has ever yet proposed to send an army into the field without guns; and if frightening is a part of the process which is necessary to aid the rifle to success, let us have the most frightening weapons we can. But do not say artillery is no use because the statistics you have show us very few casualties from artillery fire. There is a great reason why these statistics are false. The men destroyed by artillery fire do not go into the hospital, and these statistics are all deduced from hospital statistics, and are absolutely valueless. Take the evidence of Mr. Treves with regard to artillery firing on this occasion. He himself says that the percentage of deaths from shell casualties is enormously great, and that the wounded never do satisfactorily; and that, I think, is a point in favour of the guns. I am convinced also, for instance, that we largely argue from statistics of the Franco-German war. It is admitted that the artillery statistics are only taken from hospital. If there is a big battle, you do not turn over every corpse to see how it was killed; you bury it out of sight as soon as you can. I am perfectly certain that the opinion is erroneous that the artillery does the frightening and the rifles do the work. I have no doubt the rifle does more of the killing, but I think an efficient artillery is an absolute necessity. There is only one point on which I differ from the lecturer—I think almost throughout his lecture—and that is with regard to the protection of the infantry soldier. I do not believe in protecting the infantry soldier. Any shield you would give him is so heavy that he would throw it away; he would run the risk of suffering from a rifle bullet rather than march about day by day with even a few pounds of iron on his back. It is human nature. Soldiers throw away even their kit on service, and would be very glad of it subsequently; but they will not carry weight. They prefer to throw away the evil they know of, and risk that which may or may not come. With regard to cavalry or mounted infantry, I must say myself I have always been an opponent of the school that believes the days of cavalry are still in existence for the battle-field. I do not believe in the great cavalry charges which you see carried out at the German autumn manoeuvres. I believe the theory is totally wrong, and that you never can get into anybody with the modern rifle, and it would be a wicked waste of men, and is altogether wrong training to teach them to believe anything of that kind is possible. But there is still a great field for cavalry. There are wild outflanking movements, getting to the rear of the army where surprise is an element in the case—that is a very different thing. It is more required than ever for scouting,

because the general absolutely depends upon scouting for his conduct of the battle. He cannot see the disposal of the enemy, and he can only tell how to fight the battle by the accurate reports of his scouts. For this purpose cavalry is necessary, but I do not believe about charging on the battle-field. As to mounted infantry, I have never been able to see that a mounted infantryman is anything more than an inferior cavalryman. If you taught the cavalryman to fight on foot, he is as good as a mounted infantryman. The argument is that the mounted infantryman is much cheaper. I know that. A pair of boots with brown paper soles is cheaper than a pair with leather soles; but it does not follow that brown paper boots are the things to buy. I do not think they are. There is one little criticism which I think one may be permitted to make on this war. We started this war with an army corps which has never been used as an army corps. I cannot conceive that anybody who has studied the theatre of war ever believed it would be. Personally, I have written in the *Contemporary Review*, and have shown, I think, that the proper organisation for a war of this kind is divisions, with a large proportion of cavalry and mounted infantry attached to them. I am not going back on what I said about mounted infantry and cavalymen. At present an infantry division, with a cavalry brigade, and three or four battalions of mounted infantry would be the proper kind of division to send to South Africa. We shall find out probably by and bye why so small a proportion of horsemen were sent out. It is perfectly impossible to allocate the blame to those concerned now. There is one deduction we have all to make in this war, and that is in connection with the system of training of the British Army, that it has got to be altered. I am going to make now what is perhaps a very radical statement. I believe that the great fault in the training of the British Army has been what I may call Aldershot. I believe that these permanent camps, in which every blade of grass, every stone, is known to every man from the general commanding down to the junior bugler, are the worst places you could possibly have in which to train soldiers. It is the unknown which is the great factor in war, and to do things over a country which everybody knows, and then to pretend you can do them in a country which nobody knows, is to my mind patent folly. What we want in England is what they have abroad. With regard to the minor portion of their training, the drills, they may be done almost anywhere; but every year our troops ought to be assembled for what I may describe as Autumn Manœuvres, with free power to move anywhere, so that they may be properly trained over the ground which is absolutely unknown, both to the leaders, the regimental officers, and the men. There is one point on which I am sure we all agree, and that is, that the bravery of the British officers and the British soldier has been shown to be as great as it ever was in any previous conflict which we have been engaged in. But untrained bravery is of no use. The bravery of the future must be trained by a proper professional course of instruction, and the Army has, to put it in one word, to be made more professional than it has ever been before.

Colonel T. STURMY CAVE (1st V.B. Hampshire Regiment):—Sir, the real problem before us is this—that there are in South Africa some 150,000 troops, the finest troops, we believe them to be, in the world; and they seem barely, if at all, equal to 70,000 Boers. That is a very serious state of things, and ought to teach us a very valuable lesson. We have heard that the lesson is not the difference in the value of the armament. The guns, General Owen has told us, are very good guns; the rifle may be to some extent inferior to the Mauser, but I doubt very much whether that has much to do with it. The lesson we have to learn now is the same lesson that has been taught in every campaign since the first recorded battle, which you will find in the earlier chapters of Genesis. There the five kings overcame Lot, and Abraham overcame the five kings. It is the same lesson that is taught by the campaigns of Alexander the Great, by those of Julius Cæsar, and those of the Emperor Napoléon, and by the war in 1870: it is that an army, to be efficient and ready to win directly it takes

the field, must be permanently organised into a mobile field force. Our army that went out to South Africa went out as individual regiments, individual battalions, and squadrons; but they were only individual units, and we left the task of organising them into a mobile field force to be done in the presence of the enemy. It is exactly what the French did in 1870. Whereas the Germans were already organised into a mobile field force, they tried to organise in the face of the enemy and failed, as we have, unfortunately, failed, in the initial stages in South Africa; and we shall certainly fail again unless we profit by the lesson at once. Particularly, I say, it is desirable to learn it at once, as we have here in England still remaining from 400,000 to 500,000 troops, even less of a mobile force than those in South Africa. We talk about divisions and army corps, and we see printed in the paper a list of battalions, which are called the First Army Corps and 10th and 11th and 12th Divisions, and so on; but I venture to say that they do not really exist as an organised field force, that is, mobile, and with the generals known to the men and the men known to their superiors. It is impossible for the general to really get the best advantage from his troops if he knows nothing of them until he is actually in the face of the enemy. You must have a permanent organisation if you are to get mutual confidence and co-operation between the commanders and the commanded and between the different units of the force. Sir Charles Dilke talked about the impossibility of fixing the responsibility, and said it was undesirable to attempt to do so at this time. I venture to say that it is not impossible. The responsibility rests with our gallant lecturer and with the able exponent of so many details, Sir Charles himself, and their brother Members of Parliament. They have, if ever anybody had, at the present moment a mandate from the people of this country to give us an efficient Army, which, I say, and which I challenge anybody to deny, is an Army organised into a mobile field force; and unless they and their fellow Members of Parliament carry it out without delay, they are betraying the trust that is committed to them.

Captain R. J. MACDONNELL (late 81st Regiment):—The very interesting paper of Sir Howard Vincent which we are called upon to consider this afternoon ranges over such a wide field of subjects, that it would be impossible to do anything more than advance very shortly any matter that interests one. There is only one matter—which I, shall allude to later—which induced me to be here; but before I proceed I should like publicly to express—as I know Sir Howard Vincent is a public man and a Member of Parliament—the sympathy which I am sure this meeting, and not alone this meeting, but the public at large, feel for him in the bitter disappointment which has come to him, at not being able to proceed to the front, after being selected, to fight the enemies of our country. There are several interesting points in the paper which we have before us, and I think the writer has shown us a very good example indeed in the manner in which he has refrained from all criticisms reflecting in any way on the officers who are in command. But he has told us in his own way, reading between the lines, one or two things which I should like to put before the meeting, and call attention to, which seem very extraordinary indeed. In his paper he mentions that the general, the brigadier, the commanding officer Royal Engineers, and commanding officer Royal Artillery and escort were on a kopje, and that within a few minutes of retiring from it, before they got 600 yards, the Boers seized the kopje and fired upon them. I do not propose to make any comment upon that, but it does seem a strange thing that it should have happened. It seems strange that the general had not better information on the subject. Again, on the next page, Sir Howard Vincent mentions the opinions he gave at the Carlton Club when he was told they did not want Volunteers—that no Volunteers would be wanted. I think that is one of the tendencies of the bureaucracy, if I may call it, of the War Office. I cannot help thinking that the question we have to discuss here to-day is a question of the future, not so much of the past—to see how we shall be able to form an Army in the future that will ward off any attacks

that may be made upon us by other nations. To my mind, the opening remark of Sir Howard Vincent deserves to be remembered, when he says:—"My desire has always been to see the Volunteer Force so intimately connected with the Standing Army as to afford it not only an immense reserve for home defence, but a valuable adjunct in the field." I might well add to that—I am sure we all wish that—but I think he might have added the Militia, the Yeomanry, and the Reserves. It seems to me, as far as I can understand it, that we want a thorough and entire re-organisation of the military forces of the Kingdom. We want to weld them into one homogeneous body, each having its proper place, but each being fitted, by military education and training, to take any part in any war in which we may unfortunately be plunged. At the present moment it seems to me that the position of the Militia is one quite out of harmony with our present and future danger. I pass from that to the question which more immediately concerns me. There is one word in the gallant lecturer's paper about which he expresses his opinion—he used the word "conscription." It seems to be admitted on all hands that conscription is not a proceeding that will find favour in this country. He has expressed his own opinion in no uncertain manner. What, then, are we to do? I will say what I have always advocated for years. Some years ago, when I was the acting editor of a Service paper, I had the honour of several interviews on the subject with the then Adjutant-General, who is now Lord Wolseley. As you are not adopting conscription, the only possible way to have the nation prepared and ready to fulfil the duty—which I venture to say is incumbent upon every male member—is by obligatory military instruction in our schools. I say that, and that only, is the means by which you can train the youth of this country, by which you can accustom them to military service, without throwing the least burden upon them, because we know that in the Board Schools many of the young fellows, almost children, have a certain amount of time which must be used to earn their living. I am extremely pleased to have an opportunity to-day—in so large an audience where there are so many men, some Members of Parliament, who perhaps may be induced to look at this subject—of saying that when the late Mr. Forster established the Board Schools of this country, now over 30 years ago, if he had only added to it some clause, by which every boy could fulfil the duty of citizenship, which I say again is incumbent upon us all, by a training extending over a certain number of years, and in which every youth should be supplied with a certificate showing he has undergone that training, it would have been of immense utility. The certificates might be the same as those of the educational authorities, showing that each boy has passed through a certain standard. If that were done, then I say we should have the youth of this country growing up educated in the first principles of a soldier, and, above all, trained when they are young to shoot. And mind you, the younger you train them, co-existent with their strength to shoot, the better they shoot. Shooting is a science; the teaching of shooting is an art; and it may be that the man who teaches the other may not be so good a shooter. And then what a vista it opens up for us for providing for the non-commissioned officers and soldiers in after life when they leave the Army. Every Board School would be supplied with teachers, every Public School in the country would perhaps have officers; and in my opinion it is the only means to meet this great want which cannot be met unless by conscription.

Mr. H. O. ARNOLD-FORSTER, M.P. (late Lieutenant Middlesex R.V.):—I read this paper very carefully indeed last night, but not with the intention of speaking on it to-day. I cannot, however, help feeling, since I have had the advantage of being in the room, that some of the speeches, at any rate, have been of such a character that they might almost equally have been made if this paper had not been before us. My feeling about what Sir Howard Vincent has done is very clear. I am in the habit of looking at a great deal of MS. and typed matter, and I must bear my testimony to the admirable

qualities of this paper. The vivacity and the sustained thread of interest throughout mark it in a very large degree as the work of an experienced hand. I ask anyone in this room who has read the paper as I have read it, with care, whether it does not tell us in every line something which we all wanted to know; but which, not being eye-witnesses of what has actually taken place, we were not competent to form a just opinion about? I, perhaps, missed something which may have been said before I came into the room, but I had hoped we might have in the discussion something dealing with the particular matters which are mentioned in Sir Howard Vincent's paper, because then we might have succeeded in eliciting from him even further information than that which he has already given us about matters which are of peculiar interest, though not of the same kind of interest as the necessity of the re-organisation of our Army in the future and other subjects which have been dwelt upon. I should like to make my small contribution to the discussion in this fashion: I should like to ask Sir Howard Vincent if when he replies he can tell us a little more even than he has already told us in the paper. He dwells on the question of entrenching, and he says that practically there was no entrenching on our part. That, to an outside observer, is one of the facts that has appeared the most astounding. I have read in the account of the Boer attack upon Ladysmith that our outlying post was driven in after, I think, two months of the siege, and that the whole party was practically cut to pieces because they were able to fall back on no entrenched post at all, and actually while we had been holding a fortress in the face of the enemy we had not taken that ordinary and reasonable precaution. If that were so, it is, of course, not hard to understand why in the ordinary routine of daily campaigning this precaution should have been neglected. But, perhaps, Sir Howard Vincent could tell us how it is that a thing so obvious and so desirable as entrenching has not become a matter of strict order, and that it has not been made compulsory on the troops to make use of the means of defence which precedent would have guaranteed as an enormous assistance to them; and the facts that were brought home to them by the losses of every day must have shown to be of overwhelming value in the present campaign. I want to know whether it was the regimental officers, the divisional officers, or who it was that failed to give this absolutely compulsory instruction to the troops to entrench on every occasion? I noticed another matter that aroused my curiosity and interest very much in the paper. Sir Howard Vincent has touched on a point which, I am sure, is in the minds of many of us. He speaks of some twelve or thirteen thousand men contained in Ladysmith, and he expresses some wonder why it was that those thirteen thousand men were contained during so long a period by a force which, as far as we can ascertain by the latest details given us to-day, at no time exceeded eight or nine thousand men. I have no business whatever to criticise the operations of military men, but if that be true or untrue of Ladysmith, it certainly does appear to be true of a great many other parts of the theatre of war. We have had very many superior forces on our side confronted by very inferior forces on the side of the enemy. I suppose there is a reason for the apparent anomaly, which is probably that constituted by the difficulty of attacking or the difficulty of moving in the enemy's country, or by something which is a sufficient explanation of this apparent inability of a superior British force to successfully engage or to avoid being contained by an inferior force of the enemy. I read every day accounts of how our horses are exhausted, how our ammunition—and this is a point Sir Howard Vincent refers to—is only supplied with difficulty, and I see that provisions are not available. I entirely bear my testimony to the praise the lecturer gives to the Commissariat Department; but there have been cases, as in the case of the march after the relief of Kimberley, when provisions have not been easy to obtain. All those difficulties must apply in equal measure, and in some cases in greater measure, to our opponents. I think from conversations which I have had and from the various sources from which I collect such opinions as I am able to form, that there is still, I am glad to say, some further explanation than we have hitherto received of why this great preponderance of

forces has not made itself as yet more effectively felt. I notice that the general public has not been very widely astray in the remarks which in its uninformed and unregenerate state it made before and during the progress of the war. There were many things suggested by the public which were fairly obvious and sanctioned by precedent, but which were not done for a long time, and which when they were done did meet with that success which it was anticipated they would meet with. Even in the last few days General Pole-Carew has adopted a manœuvre which to a layman seems a very simple one, although it may be a very complicated one—I do not know; he has adopted the expedient of using a very large force, partly to contain and partly to outflank the enemy, who occupies a strongly fortified position. I am sure Sir Howard will tell us why that inspiration has not been acted upon on any previous occasion. Those are the troubles which still affect my mind. In conclusion, I should like to say, in reply to one gentleman who made us Members of the House of Commons responsible for some of the evils which he has deplored, that I am perfectly prepared to take my share of the censure, but I do not altogether accept the condemnation. My own feeling is that if, in a private business, a man employs a specialist to do a particular thing for him—a tailor to make a coat, a lawyer to draft a will, a builder to build a house—it is a very strange method that, when the man finds that coat is not made, the house not built, or the will not drawn, the man whom he has employed should say, "It is perfectly true; why don't you do it yourself! If you would come down and bother me every day, if you would compel me to carry out my work, if you would superintend the drafting of the will for me, or mix the mortar, I will condescend to do the work for you." When we pay the enormous sums we do pay, the first and last person on whom we must place the responsibility are the persons who have, by the admission of the gentleman who spoke, to some extent failed to perform that duty, namely, the War Office and the military authorities. Although I am prepared to take my share, I am not willing to take all or even the greater proportion of the responsibility that has been spoken of.

Colonel Sir HOWARD VINCENT, in reply, said:—I am not going to trespass between yourself and this audience, Sir, for any length of time. It is perfectly certain that what a great many have come here to-day for is to have the pleasure and satisfaction of hearing your observations, because we all know a more scientific soldier than yourself, or anyone who has studied the profession more deeply than yourself, does not exist in the Army. I have been a little disappointed in the discussion. I expected to have been attacked, and to say that I have not been attacked and assailed is to say there has been little for me to reply to. I am glad that my observations were not called criticisms, but I expected that some of my respectful suggestions would be challenged. That also has not been the case, and, therefore, I am in a difficulty as to replying; but I may sum up very briefly the observations that have been made. In the first place, General Owen, in his earlier remarks, did not quite understand what I meant as regards the co-operation of the Navy. I am not sure, although the naval guns, the officers, the men of the Marines and the fleet have done all they were allowed to do, whether there might not have been more co-operation on the part of the Navy—at any rate, in the earlier stages of the campaign. I am quite well aware that it is the business of the admiral to maintain his fleet in an absolutely efficient state, but I am not quite sure whether there has not been a little feeling on the part of some branches of the Service that those in high places were not quite so willing to support the Army on land as it was desirable in the interests of the country. This is exactly what I meant. As regards garrison artillery, the gallant general thought more garrison artillery ought to have been sent to Natal before the campaign. Surely he does not think, nor anybody else, that we were going to stand a siege on the borders of Natal? If we were going to fight the Zulus, or the Portuguese, or the Basutos, or any people we might be brought into collision with

in South Africa, our force would be an active force pushing ahead, and not a defensive force requiring siege and garrison artillery. I cannot quite share his views, although he is an expert, and I am not. As regards more common shell being required rather than shrapnel, I took it that he doubted that himself, because I understood him to speak very warmly indeed of the wrecking effects of shrapnel fire, which is a most undoubted factor in this campaign. He was rather condemnatory of critics, correspondents, and Members of Parliament, and strongly urged that their criticisms should be postponed to a future day. I cannot deny that I am a Member of Parliament, but that I am a critic or correspondent I do venture to traverse. I should like to touch upon the current running in the mind of every single speaker, and most undoubtedly applauded by the whole of this large and representative audience, viz., that, whatever the ultimate issue of the campaign, although we may confer on our generals and our troops the honours which are justly their due, the lessons of this war should not be lost sight of. I am not quite sure whether there is not a disposition on the part of the people, if not on the part of the Government, to hush up all defects in the pleasure of the successful results. I will not mention individual instances, because they are so easy for everybody here to understand, but there is one instance which is very much to the front in these present days—without mentioning any names at all anybody can understand exactly what I mean—that the lessons to be learned by the defence of Ladysmith should not be lost in the general jubilation in the relief of that beleaguered city. We are all greatly indebted to my right hon. friends Sir Charles Dilke and Mr. Arnold-Forster for having come here to-day. They have given great attention to all military matters, and whenever it is possible to push them home in the House of Commons I can bear personal testimony to the undoubted fact that they do everything they possibly can to fix the attention of the nation upon the urgent need of a more unified military system. Sir Charles Dilke spoke of the pay of the soldier. If my paper serves no other purpose than to call his valuable attention to that matter I think it will not have been prepared in vain. The pay of the soldier in the field, I am convinced, is not sufficient. The expenses to which he is subjected have been perfectly colossal. I am not going to repeat the figures, but I have the figures as to my personal expenses, which show the extreme difficulty which our soldiers have met with in purchasing any comforts whatever from the enterprising Germans who accompany the Army, and show you how very little he can obtain for his 1s. or 1s. 3d. a day. It is not 5s. that we pay the South African volunteers, but 10s. —2s. 6d. for rations, and 2s. 6d. for horse. Those volunteers should not consist of gentlemen who are possessed of very fine physique, but who have left this country for their country's good in some cases. I do not mean colonials, of course; do not misunderstand me. Some young men whom we have in our midst, and whom we are always anxious to obtain suitable employment for, but find very considerable difficulty in doing so, have had the good sense to obtain from their friends the necessary passage, and instead of joining the Volunteers here they joined them in Cape Town or Natal, and within half-an-hour of the ship arriving have been taken on at 10s. a day instead of 1s. 3d. I am sure they are rendering very good service indeed, but they are not quite that admirable material which I think we might obtain for that high rate of pay, and I am very glad indeed that Sir Charles Dilke's attention has been called to it. Then there is this matter of entrenchment. I do not know whether there is anybody in this room who has not read the article in to-day's *Times* on the entrenchments at Spion Kop. I do hope everybody will read it. It is the most remarkable example for the defective character of British entrenchments and the effective character of the Boer entrenchments it is possible to conceive. Every word of that article is absolutely true—I did not write it—every word I can absolutely corroborate of the extraordinary character of the Boer entrenchments, the rapidity with which they make them up, the labour they expend upon them in the most difficult ground, the most rocky ground. We do

not know whether they were blasted or how they were done. You would not conceive it possible they could be done, but they were done, and our troops face to face with these Boer entrenchments are in miserable trenches, unable to shelter effectively a single soldier, and I believe very largely indeed because our troops will not do it. A great general, now in the field, said to me, "I believe if they were here for a month they would never entrench."

A MEMBER:—According to the *Times* to-day there is a large amount of Kaffir labour, slave labour, used by the Boers in making the entrenchments.

Sir HOWARD VINCENT:—I have never said how they did it, but there it was. This general said to me, "I believe if our people were here for a month they would never entrench." He had sent them out to entrench, and they had not done so at all. We had no practice whatever in entrenching. Our entrenching tools are of the most flimsy and wretched character it is possible to conceive. I think at some manoeuvres they have a piece of tape to represent a trench, or something of that sort. That is the ridiculous farce which is played, and all because we cannot compensate some farmer or must not disturb some squire's game, or something of that kind. Sir Charles Dilke spoke of the carbine and the rifle for mounted infantry. I agree with him, but I must honestly say there is a great deal of difficulty, especially with inferior horsemen, managing their rifles when mounted. It is a curious thing, and I have noticed it a great deal. A great many mounted infantry are extremely bad horsemen, and the worse horsemen they are the worse they manage their rifle. The carbine is certainly very much handier, and if somebody would invent something not quite so unwieldy as the rifle it would be a much more useful arm than the present rifle or carbine.

Sir CHARLES DILKE:—I said the carbine for all mounted men who carry a rifle or carbine at all.

Sir HOWARD VINCENT:—With regard to the point which was taken by Captain James as to the Railway Department, enormous credit is due to the Railway Department. It is not only Colonel Girouard. Colonel Girouard had the extremely good taste to leave things as much as he possibly could in the civil departments, and the debt of this country to the Cape Railway and the Natal Government Railway cannot possibly be conceived. Captain James said that no protection was possible. I do not say protection is possible, but I do say that protection for stomach wounds, head wounds, and spine wounds comes into the same category as entrenchments. Entrenchments mean carrying pick-axes, spades, etc., and I think we must try and do something to protect the soldiers against these wounds which so very often prove fatal. A great deal of the same sort of criticism was applied to ships at sea, that with the enormous weight of armour which was applied to turrets, and so on, the ship would never float, or, if it got one shot, it would collapse, and things of that sort. But all that has been knocked on the head, and our ships float very well. I do not say anything can be done, but I think we should try and devise something. I entirely agree with Colonel Cave as to the non-homogeneity of our army corps. It is a ludicrous thing our having a small paper army corps. I have always contended in the House of Commons, and everywhere else that the forces at Aldershot ought to be an army corps ready to embark in a week with all its provisions. The transport and regiments and everything should be complete ready to start off, and when the Government has decided on the embarkation of the troops the only thing they would have to do would be to send a telegram to Aldershot, "Transports are being prepared; be ready to embark your forces on Monday morning next." With Captain Macdonnell I am in most cordial agreement. We ought to do everything that we can to insist that our boys should be trained to drill and shoot. As I say here in my paper, it is much more important than the Seventh Standard of the Board Schools. We can do it if we put our minds to it; but I am disappointed and grieved beyond measure to see no serious signs of efforts being made in this direction, no signs on the part of the

Government or the people to acquire rifle ranges as they might be acquired. In a few years we shall not be able to acquire them at all. I do hope that anybody with influence will direct matters if possible into this channel. I am greatly indebted to my friend Mr. Arnold-Forster, whose labours in this matter have been Herculean, for the kind way in which he spoke of this paper. I am not going to trespass longer on you, except to invite all who are students of this matter to read and re-read this interesting book of Mr. Bloch, "Modern Weapons and Modern War." A great deal of what has happened in this war is really foretold in this book. Some hint has been directed as regards the slowness with which our Army is at present advancing, but we must not forget the enormous lines of communication which have to be protected. I am very much struck with the passage in this book where Mr. Bloch says that Napoleon entered Russia with 400,000 men, and although he only fought one battle, he had only 180,000 men with him when he entered Moscow. When we speak of our highly-trained troops—220,000 of them, and at the outside only 60,000 Boers, we must remember the enormous effect of modern weapons. Mr. Bloch may be only a theoretical student, but a great deal of what he says is absolutely true. I do not think he is far out when he says that one hundred men in a trench should be able to put out of action 336 out of 400 who attack them while they are crossing a zone of fire only 300 yards wide. That is rather a wide statement, and he should not be held to those figures; but there can be no doubt whatever that this campaign shows how few men, if they are good shots and hold their fire, if they play the game of "hide and shoot," may be effective against an attacking force operating without sufficient command of fire and without sufficient entrenchments, and across the open. I do not think anything more occurs to me to say. I wish I could comply with Mr. Arnold-Forster's wish and give more information. I may have some other opportunity of doing so, but I do not think I can do so now. I have been often asked how it is that the Boers have managed to keep their horses fit for work, and we cannot. That is an extremely difficult question to answer. I can only say we are so humane that we do not work our horses under conditions that the Boers do not hesitate to work them, and work them until they drop. I honestly say, however, that it is an extremely difficult question to answer. I have been much struck with the fact that was mentioned just now, viz., the insufficient advantage taken by the outposts on the occasion of the Boer attack in entrenching their positions. One of the most curious things of this campaign has been that peculiarity. On 6th January our men were completely surprised, and although they had been in front of Ladysmith for two months they had not thrown up any entrenchments at all or taken any means of protecting themselves. I am grateful to the Council and members of this Institution for their kindness in allowing me to read the paper here and for the attention given to it. If, as one speaker said, it gives food to the thoughtful, that is the only object I have in view, and perhaps it may not terminate with the discussion here this afternoon. To you yourself, General Maurice, I am very grateful indeed for having given the lecture your countenance.

The CHAIRMAN (Major-General J. F. Maurice):—I shall say little at the end of this very interesting discussion, because I am anxious not to keep you longer. There are a very large number of points raised by the lecture which one feels tempted to touch upon. But as it is getting late I shall limit myself to certain remarks that seem to me to need adding to what has been said. In the first place, when we talk about the "lessons of the war," I venture to think that there is a danger in our assuming that we can, from this one war, deduce all the lessons which will be applicable to the work of the British Army. Napoleon used to say that tactics had to be changed every ten years. I am afraid that the British Army must change their tactics every year—almost literally every year. During the past fifty years we have had fifty wars. If we don't get one every year, we make up for it by having three in one year, as we have done

during the last twelve months. In each one of those wars the conditions have been different from almost every other. I do not mean to trouble you with them, but I have been showing to the lecturer—as he justly says that he prefers prophecies delivered before the event rather than those after it—deductions made thirty years ago, directly from the experiences of 1870 and of the then condition of weapons. They include nearly everything, I think, that has been said with regard to the necessities of fighting methods shown by our present war. They refer to the necessity of not attacking in close formation, and the necessities of scouting, and all matters of that kind, almost in the words which now reach us from the front. What has happened to us in the meantime? We have been fighting, whether on the Nile or in South Africa, against magnificent savages—Mahdists or Zulus—whose one grandeur was that, without modern weapons they charged in close order against us with the most splendid heroism and sacrifice of life. The tactics that you deduced from the 1870 campaign, or from any great modern war, or from fighting against men with the weapons used by the Boers, would be wholly inapplicable to meet savages under those conditions. Therefore, if you began to establish, as we did begin to establish, immediately after the experiences of 1870 were upon us, a system of pure skirmishing as a necessity forced upon us by the then condition of weapons, and one that is enormously more stringent with the present condition of weapons, you would find that if you had crystallised that system as the only one applicable to all conditions, you would almost certainly in your very next war suffer because you applied it. It is a very delicate subject to touch, because in mentioning it one may seem to be blaming particular individuals, but actually we went into the Zulu war, where we were fighting against savages with no modern weapons, with the tactics deduced from the 1870 campaign. We adopted against the Zulus an excessively extended skirmishing order. Isandula was the result. Therefore, I maintain that the British Army is under a condition of difficulty in those respects that exists for no other Army in the world, and we must face and recognise the fact that we cannot attempt to stereotype our tactics. It is possible for either France or Germany to determine absolutely what they intend to do when they enter upon the one kind of war for which all their preparations are made. The energies of the nation are devoted to prepare for fighting against a European foe. What will happen, as surely as the sun rises, or the course of history runs, will be this: We shall, because of our experience in this war, which has merely reinforced and expanded more fully the previous experience of modern weapons as they existed in 1870, adopt all the tactics necessary for meeting those weapons. During the next four years we shall have four wars—unless the whole history of England changes in the meantime—in which the tactics on which the popular outcry will insist will be wholly inapplicable. As soon as the experiences of this war have been forgotten we shall begin to change again accordingly, and to stereotype some new form. If we are to avoid that danger we must keep our eyes open to the condition under which we are in each case about to fight, and apply our tactics to the actual facts before us in each case. We must realise that certain tactics are applicable because of the nature of the fighting that we have to deal with against the Boers, and that when we come to meet our next enemy we must have tactics suitable to fighting against them. We cannot make all wars fit into one Procrustean bed. With regard to scouting, I must say that I absolutely disbelieve, from the evidence before us, that the failure to see is due to the officers. All their sports, all their training in the hunting field, or elsewhere, tend to give them eyes. It is not so with Tommy. The last time I was in this room I had occasion to speak on behalf of Tommy Atkins. My language was taken up so warmly that it was copied into many local papers in different parts of the country, and was even put into verse. I happened to use the expression, "Give me Tommy Atkins to lead, and you may lead anybody you like." I am therefore, perhaps, now free to say that, with all his virtues, Tommy Atkins is "an absent-minded

beggar," not because of our training, but because of the circumstances which at present attend the training of the youth of the country. You have the rush from the country into the towns, and in the towns the children, in order to make a little money for their parents, are set to do some minute bit of work, such as making pins'-heads, or some minute product of machinery, which gives them no training for eyes or for life. Then the old army training of the past helps to establish these habits. For instance, we set men to do "sentry-go," and make them march up and down, looking straight to their front and seeing nothing. I was so firmly convinced four years ago, when I went to Woolwich, that that was the vital thing we had to watch, and that everything we do must tend to train the eyes of men whom the ordinary education of the country has trained not to see, that the first thing I did was to abolish all garrison guards, every guard I could possibly remove, in order that the men might not get into the habit of thinking that going on duty meant shutting their eyes. I substituted military policemen. I have spent my time over and over again going round trying to find out whether the military policemen could use their eyes. I have over and over again gone up to a man and said to him, "Why did you allow so and so to take place?" and he has replied, "I beg your pardon, sir; I never noticed it." Our men come to us from the country, trained by the habit which the country gives; not with the habit the Boer has of living on the veldt, looking after his horse and looking out for his game; not the kind of practice which comes from living a wild country life, but with the trained habit of the factory; and it takes us our utmost effort, and all our time to get them out of that habit of not seeing what is before them. I am as certain as I am of my own existence that the reason we blundered into that spruit is that the men scouting in front had no eyes. Broadwood is one of the most magnificent scouting officers we have in the Service, as he proved throughout the Nile campaigns, but no officer can be everywhere. He must have under him men who can see. I am as certain as if I had been there that the few men who came right on ahead were simply not able to see round them, because the country has trained them not to see. I have had before my eyes again and again at Woolwich, the Hanna's Post disaster. We cannot compete with the Boer training. The Boer boy is, or used to be, turned out into the veldt, bound to bring home his Polesbok for every cartridge less one that was put into his hand, not allowed to eat any meat from the time he is just able to carry a rifle and cross a horse unless he finds it himself, and sure to get sjamboked if he does not bring it soon enough. With regard to the maps about which there has been some discussion, their non-existence raises the very question of which Mr. Arnold-Forster was speaking—the responsibility of the House of Commons, or the nation behind them. I personally venture to think that Lord Salisbury was absolutely right in his statement that it is not due to anything else but the established habit of the Treasury. You have based the permanent authority on expenditure on a tradition of the past. The Manchester school is enthroned in the Treasury. Their habit is during peacetime to resist every sort of expenditure necessary for the Army. When you talk of "the enormous sums that are spent," that involves an assumption that requires a great deal of careful examination. I believe what was said to me by a great accountant the other day, that the English Army is the cheapest Army in the world for the work you get out of it. You cannot measure the loss of national wealth entailed by the compulsory service of foreign countries. With a Service such as we have, I do not believe that we get the money that is necessary to give efficiency to the Army. I believe that that want of training of which complaint has been made arises from our not having been able to get till last year the adequate manœuvring ground for which we had long asked in vain, and from our not having been able to get every year that varied ground for which we have also been incessantly asking. There have been difficulties of course. Those difficulties are overcome for every foreign Army in the world. These are purely questions of the extent to which Members of Parliament and others are able to persuade the country as to

the necessities which are before us. For those things we have been struggling for years. Thirty years ago we were fighting for the principle that it was an absolute necessity for us to have the power of getting an Army effectively put together. We always pressed it as strongly as we possibly could. Printed words do not so perish but that I can produce in evidence of what I say what was printed by the ream thirty years ago. From that day to this we have not been able to get it in perfection solely on account of money, and nothing else. Much has been done. Much remains to be done. Mr. Arnold-Forster says that you do not take the blame on yourself if your bootmaker does not make you a pair of boots properly. If, as might be the case in an Eastern bazaar, he is solely dependent on you for his material, your responsibility must depend on whether you have given him what he asked for, for making them properly or not. If you do not give the builder the amount necessary to build your house properly, he cannot build it for you. There is another point I am very anxious to touch upon: the question of who was responsible for only asking for infantry instead of for mounted men from the Colonies in the first instance. Before I say who it was, I will tell you why he did it, and why I with his experience should have done exactly the same if I had been in his place. There are Volunteers and Volunteers, and especially is that the case in South Africa. During one of the campaigns in which I was engaged there, I can answer for it that the Volunteers we obtained were of the type of whom there are many in South Africa, who just hang round the public-houses. They gave their little corps of twenty or thirty men each all sorts of savage and magnificent titles: "Shlingaum's Blazers," "Snookem's Dare-devils," and the like. They cultivated fierce and magnificent moustaches; they put on a gorgeous swagger, but they were absolutely valueless in action. The difference in this war has been that the real farming Colonial, the man of grit and active habit, has been stirred up to give you his services, and he is just as good as, or better than, the Boer, both in his shooting, his riding, his knowledge of the country, and knowledge of life. He is very different from the persons whom we had with us as our Schlomaggie Blazers. It has been said over and over again—and why anybody should doubt it I do not know—that it was left in the hands of the general in command in the field at the time to determine these questions. I know General Buller has had my own experience of the type of Volunteers we had when acting in certain previous campaigns. You have now at your service, among others not so good, some of the most splendid fellows you can possibly have. It does not follow that Sir Redvers was wrong, from his previous experience, in saying "I shall be glad to have somebody I can put in a safe post to look after the lines of communication, but I prefer not to have men of the useless type I had before." In England also there are Volunteers and Volunteers. No one knows that better than the best Volunteer officers. Thirty years ago I ventured to put it in this way in regard to the Volunteers in England: "Some will be fit to join any troops of the Line and to become the sharpshooters selected on each occasion, or the mounted riflemen who become the eyes of the Army. Others may be able to act, if properly incorporated, as the Dutch-Belgians were incorporated in Wellington's Army, with good troops. Others will only be fit to be thrown into a fortress, there to learn discipline and drill." That is as true at the present moment as it was thirty years ago. I may say that I am entirely with Sir Charles Dilke, and against Captain James, in their respective views of cavalry and mounted infantry. I almost think, when we get to the end of this war, evidence will entirely establish the truth of what Sir Charles Dilke has said. I have just been talking with Colonel Henderson, invalided home from being the head of the Intelligence Department of Lord Roberts's Staff. He has had better means than anybody of knowing what was going on during the time he was there. He has come back very strongly impressed with the fact that mounted infantry is not of much account. As he is an infantry officer you will admit that that evidence is valuable. I believe firmly in mounted infantry in their own proper place. I believe them to be, as Napoleon said of the dragoons in his day,

necessary to the support of the cavalry, both on outposts, and wherever they may be, mainly in order to save the cavalry from the necessity of fighting on foot. But I think what we have seen of General French's use of the cavalry has taught us that the cavalry is the arm which will best enable us to have the better of the Boers, with all their mobility. Captain James said he did not believe in the cavalry charge, but the cavalry acting as charging cavalry against the Boer infantry when mounted has put the fear of God into them with a vengeance. The most brilliantly successful stroke of actual tactics during the whole war was General French's charge just before he entered Kimberley. All who saw it speak of its decisive effect with enthusiasm. Coming to the question which Mr. Arnold-Forster raised, why such small bodies are able to keep us in check, I can only say that it is the direct deduction which was made thirty years ago from the 1870 campaign as to what must happen when fighting with these improved weapons. Wellington at Waterloo had 69,000 men on two miles of ground. During the 1870 campaign, somewhere about 5,000 men were quite ample to hold any mile of ground. Obviously, if that proportion is carried on as the weapons improve in rate, range, and severity of fire, a very much smaller body of men will be able with our modern weapons to resist a frontal attack. It was the deduction we all made on previous experience, that that would be the case; that a frontal attack against men armed with the weapons of to-day is, as Bloch has worked out in his book in a most exhaustive manner, one of the most difficult of attempts. Therefore, from the time Ladysmith was fairly surrounded by Boers entrenched in strong positions, I doubt very much whether it was possible to break through. At any rate, those are questions the possibilities of which there is no time to discuss at the present moment. I think we shall all agree that we have had a most valuable and interesting discussion, and in your name, before you go, I beg to offer a vote of thanks to Sir Howard Vincent for his lecture.

AN ITALIAN VIEW OF THE BOER WAR.

By General Count *LUCHINO DAL VERME*.

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Translated by Colonel C. NEEDHAM, Military Attaché to the Embassy at Rome.

ON 11th January, 1900, three months had elapsed since the outbreak of hostilities between the Boers and English in South Africa, on the expiration of the ultimatum. At that time the English were still relegated to their own territory, which was overrun by the enemy in every direction.

The time has hardly arrived to tell the story of military operations, when only telegraphic and frequently contradictory accounts have reached Europe, the only other information being derived from newspaper correspondents, who were all English, while the news from Pretoria was invariably scarce, and occasionally of such a nature as to raise grave doubts whether it was authentic. It may, however, be interesting to inquire how it happens that the well-organised British troops have not only been unable to gain any advantage over an enemy who, however brave, were unprepared and inferior in numbers, but have been repeatedly defeated, and are now reduced to a standstill, after three months of hard fighting.

At the outbreak of hostilities there were in Cape Colony, besides the regular English garrison, Colonial Volunteers, and mounted police. There were 3,000 men, chiefly Colonial Volunteers, at Kimberley; 1,500 at Mafeking; and about 1,300 in Natal, including reinforcements arrived from India at the end of September. Sir George White, an experienced general, who had been Commander-in-Chief in India, and subsequently employed at the War Office, was in command.

In the face of the sudden invasion of the Boers' through the passes, which recalled their success in 1881, the English general might—and some say he should—have abandoned the advanced positions at Dundee and Ladysmith, and retired to the right bank of the Tugela, there to await reinforcements from Europe. A careful study of the situation will, in course of time, reveal what would have been the best measures to take under the circumstances. At present, we may safely say that the Natal Government, embarrassed by the political consequences which would have ensued on the abandonment of territory to the enemy, were chiefly concerned in retaining possession of the coal mines at Dundee. Ladysmith, not to speak of local Government influence, was a camp of instruction, a dépôt and a base from which to organise an invasion of the Transvaal. It appeared unnecessary, at the beginning of the war, to sacrifice the position and the quantities of stores accumulated there. Besides which, they counted on the resistance the town could offer to a

siege, and they were right, knowing the amount of provisions and ammunition it contained and the quality of the troops entrusted with the defence: but they also counted—and here they were wrong—on the inadequate military force of the Boers, and consequently on being able to relieve the town by a certain date; that is to say, when the reinforcements should have reached Durban by sea, and have arrived at the Tugela by rail. So a stand was made at the advanced position at Dundee, and at Glencoe Junction, where there is a branch line from the Transvaal railway to Dundee. Here the first action was fought. The English made a brilliant attack on Talana Hill, defended by the Boers, who were compelled to retreat. This was called a victory, but was not one in reality, for the English had very shortly to abandon the position they had taken, leaving their wounded in the hands of the beaten Boers! It was a temporary success, followed by an unfortunate episode—a squadron of Hussars with four officers and ninety men were taken prisoners. The next day, the 21st, an action was fought with the same bravery and the same results at Elandslaagte, a railway station two-thirds of the distance from Glencoe to Ladysmith. General French succeeded in holding the enemy, and covering the retirement of the advanced division into the town, but he suffered heavy loss. Generals White and Yule, with their two divisions, joined hands at Ladysmith on the 25th.

After these two doubtful victories, the English sustained their first reverse on 30th October. Four and a half companies of the Gloucester regiment, six companies of the Irish Fusiliers, and the 10th Mountain Battery, all under the command of Lieut.-Colonel Carleton were sent from Ladysmith to Nicholson's Nek, a distance of six miles, were surrounded by the Boers, and compelled to lay down their arms. The number of prisoners is uncertain, but they were said to be nearly 1,000, including several officers. It seems evident, however, that the primary cause of the disaster was a stampede among the battery mules, which were startled by the fall of some rocks during the night march. The result was a general confusion, not only among the battery mules, but among those carrying reserve ammunition for the infantry, and all got away, leaving the men with only the rounds they carried, and without any artillery.

The disaster made a great impression in England, for very few of the detachment were killed, and one-half were taken prisoners. It was an incentive to renewed exertions.

In this unfortunate state of affairs, General Sir Redvers Buller landed at Cape Town on 30th October. According to statements then made, and still said to be accurate, he had a new plan of campaign, on lines converging towards the centre of the Free State, and would abandon the idea of relieving Kimberley and Ladysmith. The three infantry divisions commanded by Generals Lord Methuen, Clery, and Gatacre, and General French's cavalry division, were to be echeloned on the line De Aar-Naauwpoort-Stormberg, making these towns the secondary base for their three columns which were to march from their respective bases on the sea coast at Cape Town, Port Elizabeth, and East London. This was a rational scheme, which, while it allowed of a greater part of the available

forces being employed on the direct line of advance, would have compelled the enemy to raise the siege of the two towns and rally for the defence of the invaded State. But the execution of the rational scheme was not even commenced, for the first reinforcements arriving on 9th November were sent to Durban and hence to the Tugela, while others followed in the same direction, until General Clery found himself in command of four brigades, or a force of over 16,000 men.

Public opinion, both in the Colony and in England, had insisted on a divergence into Natal for the relief of Ladysmith, where 12,000 English troops were besieged, and now insisted on a divergence into the western field of action, for the relief of Kimberley, the Diamond City, the abode of Cecil Rhodes, the man who from his financial enterprise in South Africa had been called the Napoleon of the Cape.

So while Lord Methuen was sent to the Orange River with the best troops, the Guards and Highlanders, General Gatacre's force in the centre was reduced to barely half a division, quite inadequate for any advance in force. So many of General French's six cavalry regiments were taken away, partly to assist Lord Methuen, and partly to Natal, that he was left with only five squadrons. Difficulties increased; the war assumed a serious aspect; the 5th Division was mobilised, and on 25th November General Buller assumed personal command of the Eastern force in Natal, where desperate efforts were to be made for the relief of Ladysmith.

Meanwhile, Lord Methuen, having concentrated his forces on the Orange River, was to march northwards with 10,000 men and relieve Kimberley. On the 23rd, he fought a battle at Belmont, and on the 25th another at Graspan, two stations on the railway running from north to south along the western frontiers of the Orange Free State and the Transvaal.

In both these engagements the English drove the Boers from their positions, and the latter, who were only about 3,000 strong, finding themselves outnumbered, pursued their usual tactics, and did not attempt to prolong a resistance which would have led to their defeat, but retired from Belmont to the next station six miles away, and from Graspan to another station on the Modder River, from which it takes its name. There they received heavy reinforcements, and numbering from 8,000 to 10,000 made a stubborn resistance to Lord Methuen's attack, his division losing 500 officers and men killed or wounded. The general and his gallant troops remained in possession of the field. The Boers, as at Belmont and at Graspan, had retired a few miles northward, still on the railway, and for the third time took up a position and entrenched themselves.

"The curtain rises on a sad week, the saddest week of the war, and one of the worst on record in our military history." These were the words of the *Times*, the most influential English paper, alluding to the days of Stormberg, Magersfontein, and Colenso. At Stormberg, on the night of the 10th January, General Gatacre had sent from Molteno a detachment of his attenuated division, 2,200 strong, by railway to a place whence they were to march and surprise the enemy. But lack of reliable information, the ignorance or treachery of the guides who led the column, the weariness of the men, who were out of condition, and the absence of the most

elementary precautions on the line of march, all contributed to failure. The English troops were exposed to heavy musketry fire as they were marching by fours through a mountain pass; some of them retired to Molteno; the remainder, over 600 men, with nine officers and two guns, fell into the hands of the Boers.

On 12th November, Lord Methuen fought his fourth battle, but whereas at Belmont, at Graspan, and at Modder River, he had been able to bivouac on the field from which he had driven the Boers, he was now forced to retire defeated from Magersfontein, with the loss of 1,000 men. Of the Highland Brigade alone 50 officers and 650 men were killed or wounded. But in spite of the defeat, there were very few prisoners, in contrast to the numbers at Nicholson's Nek and Stormberg, and consequently at the Tugela and at Rennsburg. Many were the killed and severely wounded of those splendid Scotch battalions, of whom it may still be said, as by Napoleon, nearly a century ago, "The English infantry are the finest in the world; fortunately there are not many of them"!

The week did not end without a third disaster to the British arms in Natal, just when the Commander-in-Chief, in person, was to have inflicted a defeat on the enemy, which would have compensated for previous reverses. On 15th November, Sir R. Buller led to the attack of the Boer position at Colenso on the Tugela all the troops he had been collecting for a month, and preparing for the action which would lead to the relief of Ladysmith. The attack failed. It is said the English numbered 22,000 and the Boers from 14,000 to 16,000, so that the latter were one-third inferior in numbers. According to their own account, the Boer losses were insignificant, while the English lost 1,100 killed, wounded, and missing, and eleven guns. The battle of Colenso was the final action of the last three months in 1899. A lull in the operations ensued, owing partly to the necessity for the three defeated generals to collect their forces, repair damages, and await reinforcements, before continuing the advance, partly to the new order of things, consequent on the English Government appointing Lord Roberts Commander-in-Chief, with Lord Kitchener as his Chief of Staff. The 6th and 7th Divisions were mobilised, and the 8th warned for active service; regiments of Imperial Yeomanry were organised, the Militia battalions, and even the Volunteers, were called out, though the latter were only intended for home defence.

The stout English people, as might have been expected, were not downcast, but responded cheerfully to the Government appeal.

While they are preparing men and equipment in numbers never before collected in England for a foreign expedition, the time is suitable for reviewing past events, for enquiring into the reasons for what has happened, and for attempting to prophesy what may occur in the future. It is needless to discuss the well-worn question as to whether it was right or wrong to hold Ladysmith, for there are good arguments on both sides. Nor is it any wonder that the commencement of the campaign was unfavourable to the English; indeed, it was evident that such would be the case; they were inferior in numbers, and the base for supplying men, horses, and stores was 6,000 miles across the seas; they could not expect

to find themselves in a position to make way against the enemy, until after the arrival of fresh British troops, of horses, mules, guns, wagons, and provisions, of everything required by an army large or small, and wherever the seat of war may be. But what has surprised everyone, and none more than the English themselves, was the fact that when the reinforcements, which were generally expected to change the situation, did arrive, there was no change at all; indeed, things went from bad to worse. Before reinforcements began to arrive, on 30th October, the disaster at Nicholson's Nek had made a great impression on people in England, and had astonished all military men, who were accustomed to regard the English troops as so brave, that they could hardly imagine the possibility of 2,200 men in the open, in broad daylight, only a few miles from their camp, surrendering to an enemy, or at any rate not having made that enemy paid dearly for their temerity. It is not quite certain how this strange affair happened, nor is it known how, ten days before, during the retreat from Glencoe, a whole squadron of Hussars fell, almost intact, into the hands of the enemy. For the honour of the British arms, which has been maintained for centuries on many a battle-field in every part of the world, we must reserve judgment until the day when the War Office, according to invariable custom, publishes an accurate statement of the facts. Meanwhile, we may say, without fear of contradiction, that on 20th and 30th October, and again on 10th December, at Stormberg, there must have been, as there always has been, some lack of efficient scouting when on the march near the enemy; and this, quite irrespective of the officer who had ordered the movement, and sent a detachment to carry it out.

This lack of scouting, this neglect in reconnoitring the ground to the front and flanks of troops on the march, was all the more fatal, because the enemy, being natives of the country, were likely to be, and in fact were, perfectly well informed as to the movements of the English; their extraordinary mobility necessitated far more careful reconnaissance pushed as far as possible from the main body.

It is needless to observe that this remarkable mobility was one of, and perhaps the principal, reason of the Boers' successes, as want of mobility was the chief cause of the English disasters. The Boers are all mounted, but this does not mean that they have large bodies of cavalry with all their various requirements, nor that they are not first-rate infantry sharpshooters. Their wants are small, and the men are supplied by an arrangement of numerous wagons on the line of communications, while the horses feed on the grass which is to be found everywhere, and to which these little country-breds are accustomed. The English, on the other hand, being scattered all over the country, find themselves with small detachments of cavalry, where they ought to be in force, with European horses unaccustomed to the climate and pasturage, and hence liable to fall sick; they require large convoys for their provisions, they have many infantry battalions well organised and well led, but with endless requirements for men and officers, and, worst of all, they move slowly, the reason being that the English soldier does not march fast, that he carries

very little, and grumbles a good deal at having to carry so much. These facts necessitate an enormous amount of transport, but the transport service has not been previously organised for all divisions, and certainly not for an army corps, because the transport was never mobilised in the United Kingdom in time of peace, the camp at Aldershot being permanent. To justify the system, it is said that, according to the place in which war would be waged by the English, a special transport would be organised suitable to the country, the climate, and other circumstances.

This plan worked well enough in small expeditions, of which the English had plenty in their vast Empire. No doubt it is easy enough to organise transport for these in a very short time, even for the endless needs of the officers, who are all gentlemen, and of the men, who enlist in the hope of living better than they can at home; but it is a very different story when it has to be done for an army of 30,000, 50,000, or 80,000 men.

And so the same thing happened to the English, but on a larger scale, as happened to us in 1896 on the Ethiopian highlands, that is to say, as fast as men and guns were sent out, numbers of horses, mules, and drivers were despatched to the seat of war—only the English sent wagons, where we sent camels; but all this was of no avail without previous organisation; when all these supplies arrived at Cape Town and Durban, weeks were required to put them in order, and months passed before the transport began to work properly at the arduous task of supplying an army in the field in a country where there are no local resources. The difference between the English and Italian campaigns was that we had to organise our transport with pack animals working in a mountainous country, where there were no roads, while the English were in a region traversed in every direction by roads and even by railways. The question of transport is of the greatest importance, for it is inseparably connected with that of mobility; this latter is essential to any probability of success. Large numbers of troops, even of the very best, are not enough to ensure a victory; men and horses must have their daily food, they must have ready to hand reserves of ammunition and clothing, forges, tools of every kind, dépôts for engineers, hospitals, and commissariat. To give an idea of the enormous number of wagons and animals required for transport on the fighting line, we need only say that on 11th October, when hostilities broke out, the War Office gave orders for the purchase of 20,000 mules and the construction of 800 wagons. This was only for the first four divisions despatched from England, not counting the requirements of local corps and besieged forces, the service on lines of communication to be worked by oxen, and on the railways.

Only a small portion of these supplies had reached Cape Town when the troops for whom they were intended arrived, nor even when the 5th Division was mobilised, and the formation of the 6th was ordered. Almost as much more had to be ordered immediately for the despatch of the 5th, 6th, and 7th Divisions, not to speak of what was wanted for the Volunteer corps and the contingents from Australia and Canada. When we remember that the transport for one division in

South Africa employs 200 four-wheeled carts and 2,400 mules, we can imagine how the enormous difficulty in supplying a whole army so far from home may influence the outcome of the war. In this deplorable state of affairs consequences which might have been foreseen ensued; Lord Methuen in the west, General Gatacre in the centre, and Sir Redvers Buller in Natal, all found their transport so inadequate that they were unable to leave the line of railway, for the railway supplied the troops, took the place, as far as possible, of the transport which should have worked on the roads, and was eventually used to carry detachments of troops and save them the fatigue of marching. The result of this clinging to the railway was that all the engagements, without exception, were fought near the stations. They took place consecutively at Dundee-Glencoe Junction, Elands Laagte, Ladysmith, Belmont, Modder River, Stormberg, Magersfontein, Colenso. The minor actions were fought at Chieveley (armoured train), Colesberg, Colesberg Junction, Dordrecht, and Rennsburg.

Naturally, the Boer leaders, knowing the defects in their enemy's transport, did not suppose, but knew for certain, that he must either follow the railway, or not leave it more than half a day's march, and return to it at night. Therefore, they were always on the wait for him, in well-chosen fortified positions, at the stations.

Here we may ask how the War Office in London or the Commander-in-Chief in Africa, ought to have, or could have, remedied this state of things. It is not easy to answer the question, for the remedy cannot be improvised. The lack of mobility might be obviated by an increase in the number of cavalry; but cavalry require transport, and a good deal of it. Hence the idea of forming a mounted corps on the lines of that employed by the enemy—the mounted infantry. But it is not easy to foretell how it will answer; how the Volunteers and Imperial Yeomanry, however splendidly mounted at the expense of the English aristocracy, may endure the hardships of war in a vast region totally unknown to them, fighting an invisible enemy, who is a first-rate marksman, is inured to fatigue, and ready to risk everything. One might suppose that the end would be better attained by corps raised in the Colony, both men and horses natives of the Colony. It has been a matter of surprise that recourse was not had to this expedient at the beginning of the war, for undoubtedly, as is now acknowledged, this is the best method of procuring troops ready for cavalry scouting, good marksmen, who know the country and are entirely independent of transport.

It is not out of place to mention how, in 1896, when troops were being continually sent to Eritrea, General Baratieri telegraphed one day to the Government that if they sent any more troops to Adagamus they would embarrass him greatly to find provisions for the whole expeditionary force. Nor must we forget that some months later, in the same year and in the same district, General Baldissera, with full powers to march to the relief of Adigrat whenever he chose, and with whatever force he considered sufficient, left Adi-Cajé with only 16,000 men, when he might have taken 25,000. The experienced leader knew that at such

a distance from the base he would have the greatest difficulty in feeding even 16,000 men, and he could not have moved had he not spent three weeks in collecting a sufficient number of days' rations for the expedition. There were no railways on that plateau, not even a cart road, and all the supplies had to be carried on mules or camels, for eight or ten days' march from the base. In South Africa it is quite possible to organise efficient transport for a whole army, even the mountain districts being traversed by a system of roads and railways. It is only a question of money and time, of prudent, patient study. We may imagine this will be the first care of Lord Kitchener, the new Chief of the Staff, a master of the science of organising expeditions with long lines of communication and of long duration. He knows that the final defeat of the Khalifa was due not so much to the valour of the troops as to the patient preparation of supplies all along the Nile and the railway which had been made for the purpose during a campaign which lasted two years and a half.

There is another difficulty to be overcome in the field—that of making the troops march long distances, and compelling the infantry soldier to carry his own baggage and at least one day's emergency ration.

As we have said before, the English soldier does not like marching, and carries little more than his ammunition. The practice of making small expeditions, where there are abundant means of transport, has given rise to the belief that it is a mistake to overload the soldier. If in Continental Armies they are too heavily laden, in England they go to the opposite extreme. One can understand this to a certain extent in a country where everything tends to comfort, not so much from effeminacy as from inveterate habit and a feeling of superiority over those who cannot obtain it; but what one cannot understand, considering the physical education of the English, who are addicted to every kind of outdoor exercise, is the aversion, one may almost call it, to train infantry in making long marches on a rational system, which is one of the chief objects of commanding officers in Continental Armies.

A ten-mile march is considered in the English Army an average day's work for infantry, while on the Continent they do from thirteen to fifteen. Imagine the position of a general in command of troops who march about ten miles a day, at the rate of two and a half miles per hour, when opposed to the Boers, who can do five miles an hour, and who, day after day, can easily cover from twenty to twenty-five miles. Doubtless, it is hard upon any infantry to fight a mounted enemy, but when the infantry march slowly and carry little, the disadvantage is such as to prejudice any chance of success by rapid movements made independently of the railway.

When General Gatacre wanted to surprise the Boer camp at Stormberg he put his men in a train, because he knew that if they went on foot, though it was a short march, they would not arrive in good fighting trim.

As he could not send them all by train, he only sent 2,200—an inadequate number for such an enterprise. In fact, when they left the train, and had marched a few miles to attack the position, they were compelled to retire, leaving a third of the force upon the field.

If we have to seek the principal causes of failure, during the first part of the campaign, in the organisation, it must be confessed there were also defects in the tactical scheme. The bravery of the troops sometimes compensated for want of ability in their leaders, as, for instance, the gallant behaviour of Lord Methuen's Guards and Highlanders; but we cannot but express surprise when we see battalions in column sent to attack the enemy in entrenched positions, in these days when we know so much about long-distance fire, both in peace-time and in war, when the old order of deep formations has been abolished, whenever troops enter the zone of the enemy's fire. We need not be military men to know that in such formations few of the defenders' bullets go wide of the mark, and that one may often disable several men, whereas the enemy's fire does little damage to a line advancing in the attack formation of the present day. Magnificent troops like those that made the attack at Modder River and Magersfontein almost as though they were at a field-day, and left dozens of officers and hundreds of men upon the field, are not always available, and half a century after the Balaclava charge we may say "*C'est magnifique, mais ce n'est pas la guerre!*"

However much people in Italy may think and may say there are no recriminations in England as to the conduct of the war, one has only to read the most influential papers to be convinced of the fallacy of the statement. Only, the tendency is to throw the blame, not so much on the generals, as on the War Office, at whose administrators abuse, sarcasm, and even invectives, are directed. Among many criticisms are those on the artillery, which many say is inferior in range and efficacy to the Boer guns. There is a very natural reply that the guns sent to the Cape belonged to field artillery, and as such could not be above a certain calibre, whereas the Boers brought fortress guns to the front, by rail, and these are naturally heavier and have a longer range. To oppose them, the English had recourse to their naval guns, which did excellent service. To do them justice, it must be confessed that, with the exception of the unfortunate episode at the Tugela, when Colonel Long rashly brought his guns within 700 yards of the Boer trenches, the English artillery well mounted, well served, and mobile, has done good work throughout this unfortunate campaign, and much heavier loss would have been suffered, but for its opportune action at the critical moment of an engagement.

Having touched on organisation and tactics, we must turn to strategy, and say that the first mistake in scattering forces to obtain secondary ends over a theatre of war as vast as Central Europe¹ was probably due, not to the Commander-in-Chief, but to the influence of Government, either English or local, or both—that fatal influence of which we suffered the consequences in the war of 1895-96, and which

¹ The distance from Cape Town to the northern boundary of the Transvaal is the same as that from the Pyrenees to the Carpathian Mountains. France, Belgium, Holland, Switzerland, Upper Italy, and a great part of Germany and Austria, could be placed on that vast territory in South Africa subject to England and the two Republics.

had some share in the Spanish disasters during the war in Cuba. It appears that this influence was brought to bear not only on the Commander-in-Chief, but also on his subordinates, if we are to believe a correspondent in General Gatacre's camp, who wrote to the *Times* on 6th December:—"I have heard it whispered that the General may be induced to act against his own conviction. One thing is certain—that great pressure is brought to bear upon him by people who know nothing about military matters. But I hope he will be firm, and not advance until his cavalry are fit for work. Four days later," says the military correspondent of the *Times*, "that is, on 10th December, the disastrous attack on Stormberg was attempted, and we may presumably ascribe that humiliating and unnecessary failure to the system of rendering military operations subordinate to considerations of local policy, which have ruined the conduct of the campaign, and occasioned losses without attaining equivalent results."

All who read the telegrams arriving daily from London, from the Cape, and from Lourenço Marques are asking "How will it end?" In October, belief in the eventual success of England was unanimous. The disaster at Nicholson's Nek did not shake public opinion as to the outcome of the war. It was said, and everyone believed, that when reinforcements arrived the British forces would infallibly win the day; but the reverses at Stormberg, Magersfontein, and Colenso have somewhat shaken this belief. It is persistently said they will be victorious, but no one seems to be absolutely certain of it. Reliance is placed on the arrival of more reinforcements, on the formation of special corps of mounted Volunteers, but, above all, on the new Commander-in-Chief, the popular Lord Roberts, and on his talented Chief of the Staff, Lord Kitchener, fresh from his victories in the Sudan. This reliance is justifiable, and hopes will be fulfilled if a fresh start is made, if a rational plan of campaign is adopted, without scattering the forces; if the units of the transport service are placed in a condition to move independently of the railway; if commanding officers are compelled to employ their troops, not to display their bravery, which English officers surely have no occasion to prove, but in a manner rendered essential by the long-range fire of modern rifles.

For all this, time is wanted—perhaps several months; Lord Kitchener is reported to have said a year. So be it! He ought to know, as he took two and half years to beat the Dervishes, after waiting eleven years for the proper time to commence operations; he knows that it is to the advantage of the English to prolong the campaign until the summer, which is winter in South Africa, when the climate will suit them better, and there will be less pasturage for the Boer horses, which are the chief factor in their extreme mobility. The Boers have their whole force in the field, and cannot, like the English, keep up for long the tremendous efforts by which this young nation of heroes is astonishing the world.

Perhaps the last word may have to be said by the natives of Cape Colony. The original Dutch, now British subjects, the "Afrikanders," may by their action decide the result of the struggle.

Meanwhile, fighting goes on in the centre, where General French, after a series of skilful manœuvres and some success at Colesberg,

sustained a slight reverse on 5th January. Four companies of the Suffolk Regiment, sent by night to attack a position not far from their camp, were compelled to retire, leaving 150 men and 7 officers prisoners.

The struggle is most intense round Ladysmith, where the brave garrison, after a ten weeks' siege, and after repulsing the repeated attacks of the enemy on the 6th, are every day expecting the relieving force, a whole army corps of 30,000 men with 140 guns concentrated on the Tugela, to march and deliver them from the surrounding Boers. The *Times* says, 8th January:—"Patience has reached its utmost limit, when we think that only fifteen miles away there is a large body of English troops, which seem to absorb all the reinforcements that arrive in South Africa, and yet are unable to relieve the Ladysmith garrison."

Forthcoming events will assume ever-increasing importance. Even supposing the Boers remain at their present number of 40,000 for those who are now called to arms will barely compensate for losses and sickness, it is reckoned the English Commander-in-Chief will have 120,000 men under his command by 1st February.

The following are the losses sustained by the British troops from the commencement of hostilities until 28th December. The list has been carefully compiled by the Press Association in London:—

Losses.	Officers.	Men.	Total.
Killed	82	887	969
Wounded	267	3,279	3,546
Missing	107	2,819	2,926
Total	456	6,985	7,441

These are the losses sustained by the English, who, after three months' warfare, find themselves just where they were at the commencement, and have even been compelled to retire; during this time they have done little damage to their enemy, who encamp on and raid the territory of the British Crown. To these losses we must add those at the sortie from Mafeking on 26th December (about 50 in all), those of General French on 5th January (217, including prisoners), those of General White at Ladysmith on 6th January, which are not known. We may expect many more losses, for the war is not yet over between 40,000 Boers and the 100,000 men England will have sent to South Africa to fight them, without being certain of the result. England, the greatest colonial Power in the world, who spends £40,000,000 a year on her Fleet and Army, has come to this!

Sir W. F. Butler, who formerly commanded the British troops at the Cape, warned the Government that they would require 100,000 men to beat the Boers. The Government removed him from his command. This is a serious matter for Ministers who lightly undertake distant wars, and on whom, more than on the generals, the responsibility for failure rests.

(To be continued.)

FIRING ON COAST DEFENCES.

By Lieutenant MYAKISHEF, Imperial Russian Navy.

Translated from the "Morskói Sbórník," No. 1, January, 1900, by
Captain J. E. CROWTHER, R.M.L.I.

IN the case of a fleet attacking coast defences, the former will, in the majority of cases, have a great advantage over the latter in so far as *matériel* is concerned. The re-armament of shore batteries, so as to keep pace with the requirements of modern artillery and with the constant improvements that are continually taking place, presents an almost insoluble problem, new fortifications being comparatively seldom constructed.

On the other hand, new ships, armed with the most modern guns, are constantly being built.

Thus, as far as gunnery armaments are concerned, a fleet, at any given moment (with few exceptions), will always possess a considerable advantage over shore defences.

The mobility and superiority in point of guns that a fleet possesses will enable it to be fully master of the position, both as regards choice of time for the attack, and as regards the conditions of that attack.

A fleet possessing these advantages over coast defences should, in an encounter with the latter, develop them to the greatest possible extent, and seek to derive the maximum results therefrom. The effectiveness of artillery fire, as is well known, depends on the following points:—Accuracy of the fire, rapidity of firing, and its destructive effects. Therefore, in action each of the belligerents will endeavour to develop these points to their maximum extent, and at the same time to place their opponent in such a position that the effectiveness of his fire may be as small as possible.

When attacking coast defences, a fleet is certainly most advantageously placed for solving this problem.

Accuracy and rapidity of firing, all other conditions being equal, depend on the distances at which the firing is carried out, on the accuracy with which those distances are estimated, on the speed and accuracy in altering these distances, and on the swiftness with which the change of position into the new alignment is effected. The destructive effects of the fire depend, in their turn, on the type of shell used for firing at a given object, and on the selection of its explosive.

Distance will have little influence, however, on the destructive effects of shell if the target is but comparatively slightly protected, provided live shell and not solid shot is used.

If the protection is such that the high-explosive shell requires a certain energy to penetrate it, then of course its destructive effect will depend on the distance of the range, because such a shell, if it explodes on, but does not penetrate, the protection, will do but little material damage.

Thus, in order to solve the problems submitted above, the following questions will have to be answered :—

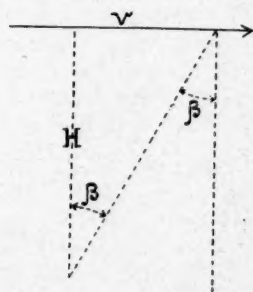
1. How should the ship be manœuvred ?
2. Within what range should this manœuvring be carried out ?
3. What shells should be used, and how should the firing be conducted so as to inflict the greatest possible injury on the enemy ?

THE BEST WAY OF MANŒUVRING WHEN FIRING ON COAST DEFENCES.

In order to secure a maximum rapidity and accuracy of fire to her own advantage and to the disadvantage of the enemy when attacking coast defences, a ship when attacking coast defences should so manœuvre as to render the difference in the speed with which the ship and the guns of the shore batteries alter their respective bearings as great as possible, making this speed in the case of the ship very small, and that of the shore guns very great. Besides this, the alteration of the distances should be gradual and even, in order to allow of effective firing.

If a ship is steaming in a straight course past a motionless target, the speed of the axes prolonged is the same in both cases, and may be expressed thus :—

Fig. I.



$$\frac{d\beta}{dt} = \frac{v}{H} \cdot \cos^2 \beta$$

Where β = angle made by the axis prolonged with the beam,
 v = speed of the ship,
 H = the beam distance.

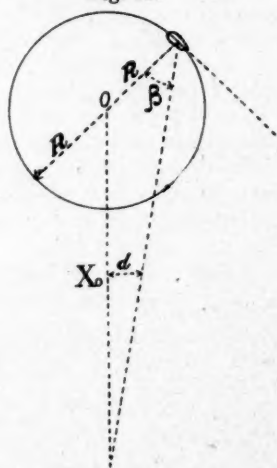
When the ship is steaming straight on the target, or is retreating from it, the speed of their axes prolonged is equal to nil. Therefore, in general, if a ship when firing at a battery manœuvres in straight courses, the difference in the speeds of the axes prolonged is equal to nil, *i.e.*, a ship so manœuvring gains nothing. In fact, it rather loses, since although the speed and accuracy on both sides will be the same (for the speed with which the axes prolonged are altered will be similar in both cases), yet

the effectiveness of the fire will still be on the side of the antagonist that occupies a motionless position, for in proportion as the ship approaches nearer to the battery, its "course angles" will become greater and greater, and consequently if the shore battery is firing A.P. shells, the chances of piercing the ship's armour are proportionately increased. The same applies to explosive shells and the facility with which they will penetrate the lightly protected portions of the ship's side. Besides this, owing to the inconstancy of the course angle, all the ship's guns cannot be brought to bear during the whole period of that course.

In the special case when a ship is steering straight for its object, or is retreating from it, the speed of the firing will be nearly identical on both sides as a rule, but the accuracy and effectiveness of the explosive shells from the battery will be greater than would be the case, were the ship differently manœuvred, as there will be less chance of missing the ship when she is steaming on such a course. As regards the use of A.P. projectiles, the battery will scarcely be advantaged by them, as it is doubtful whether in the given instance they would be productive of much result, for the angles at which the projectiles would strike the ship's side will be very acute. Exception, of course, is made in the case of firing at turrets and conning-towers. Thus for a ship to manœuvre in straight courses is to place itself in the least advantageous position in relation to an opposing battery. The same conclusion will have to be arrived at, as regards the conditions of firing, if the ship manœuvres in circles either convex or concave to an immovable object.

In the First Case.—The speed of the axis prolonged may be expressed thus:—

Fig. II.



$$\frac{d\beta}{dt} = \frac{\frac{360^\circ}{T}}{1 - \frac{R}{X_0} \frac{\cos \beta}{\cos \alpha}}$$

Where T = the prolongation of circling,

R = the radius of circling,

X_0 = the distance of the target from the centre of the circling,

$\beta = 90^\circ$ — the course angle.

But the speed of the axis prolonged of the battery will be:—

$$\frac{da}{dt} = \frac{\frac{360^\circ}{T}}{\frac{X_0}{R} \cdot \frac{\cos a}{\cos \beta} - 1}$$

Taking the relation of the first speed to the second we get:—

$$\frac{\frac{d\beta}{dt}}{\frac{da}{dt}} = \frac{\frac{X_0}{R} \cdot \frac{\cos a}{\cos \beta} - 1}{1 - \frac{R}{X_0} \cdot \frac{\cos \beta}{\cos a}} = \frac{(X_0 \cos a - R \cos \beta) X_0 \cos a}{(X_0 \cos a - R \cos \beta) R \cos \beta} = \frac{X_0 \cos a}{R \cos \beta} \quad (1)$$

Since the angle a is always less than β , and if the ship is manœuvring from its target at distances greater than the radius of its circling, then X_0 is greater than R , and consequently the numerator of expression (1) will always be greater than the denominator, which means the speed of the axis prolonged of the ship will be greater than that of the battery.

Exception will be made to this rule if a ship so manœuvres that the distances from the target are less than the radius of its circling, as in this latter case—

R is greater than X_0 and a is greater than β ($R > X_0$ and $a > \beta$),

and consequently the fraction (1) will be less than a unit; but a ship would hardly decide to manœuvre at such distances, unless it happens to be in a dead angle of the battery; but in that case the best thing for the ship to do would be to remain where it was.

In the Second Case.—The speed of the axis prolonged of the ship may be expressed thus:—

$$\frac{d\beta}{dt} = \frac{\frac{360^\circ}{T}}{1 + \frac{R}{X_0} \cdot \frac{\cos \beta}{\cos a}}$$

and the speed of the battery's axis prolonged:—

$$\frac{da}{dt} = \frac{\frac{360^\circ}{T}}{\frac{X_0}{R} \cdot \frac{\cos a}{\cos \beta} + 1}$$

Taking the relation the first bears to the second, we get:—

$$\frac{\frac{d\beta}{dt}}{\frac{da}{dt}} = \frac{X_0 \cos a}{R \cos \beta} \text{ is greater than 1,}$$

that is, in this case also the speed of the ship's axis prolonged will be greater than the speed of the prolonged axis of the battery. Consequently a ship can in no such case derive any advantage from manœuvring along the arc of a circle; on the contrary, the ship will be in a far worse position, both as regards rapidity, accuracy, and effectiveness of fire, than it would be if it were to maintain a straight line.

The most advantageous method of manœuvring will be attained when :—

$$(2) \quad \dots \dots \dots \frac{d\beta}{dt} = 0 \text{ and } \frac{da}{dt} = \text{max.} \dots \dots \dots (3)$$

When once the derivative is equal to nil, the function itself should be constant, *i.e.*, to fulfil equation (2) it is necessary that $\beta = \text{const.}$, *i.e.*, it is necessary to manœuvre so that the "course angle" should remain constant, *i.e.*, the track of the ship should be a "fighting loxodromy."

The speed of the axis prolonged of the battery in this case will be expressed thus :—

$$\frac{da}{dt} = \frac{v \cos \beta}{X_0}$$

Wherefore, in order that the speed of the battery's axis prolonged should be as great as possible, it is necessary that the ship, manœuvring in "fighting loxodromy," should be enabled to steam at a maximum speed.

Increase in the speed of the prolonged axis of a motionless antagonist may also be attained by increasing the course angle, but in this case the speed with which the change of distances can be effected is diminished, which is not desirable, as firing from the battery will be facilitated thereby. Besides this, the selection of a course angle depends on the ship obtaining the most powerful arc of fire with the least exposure possible. On the strength of these circumstances, it would appear more rational, in order to increase the speed of the prolonged axis of the battery, to increase the speed of manœuvring. Thus, a ship manœuvring in "fighting loxodromy" at full speed places itself in the most advantageous position for attaining maximum rapidity and accuracy of fire, while it places the enemy in the most unfavourable position to develop his fire or render it effective, because the course can be so chosen as to offer the least possible target either to explosive shells or to A.P. projectiles.

In addition to all this, such a system of manœuvring gives the ship the following further advantages :—

Distance changes gradually, and the degree of change is known beforehand on board ship, thanks to which, and knowing approximately the intervals between shots, it is possible to set the sights in advance without waiting for the range to be given. If the ship does not possess a range-finder with a fixed base—without which it is quite impossible to lay down the distance to the shore battery—then knowing the distance

¹ "Loxodromy" comes from two Greek words, *λοξός* *ἐρόμος*, signifying "a slanting course."

from the starting-point, which was fixed by taking bearings before the commencement of the firing (during the firing the compass will not act, as the needle will fly several degrees to the side) the ranges can be estimated by moments.

Besides this, firing while manœuvring thus will give the very best results, and appears to be the only occasion when it can be properly carried out, being founded on theoretical *data* similar to what is in force in the case of land service artillery. In order to make it more difficult for the shore battery to judge the changes in the range, the course angle should be altered in each run without swerving outside the limits of the most effective arc of fire. When choosing the course angle it is necessary to keep in view yet another circumstance: A battery firing on a ship in motion will have to be constantly altering its sights, and therefore every effort should be made to lead the battery to estimate the ship's speed as far wide of the mark as possible. The magnitude of the error the battery may be induced to make will depend on the speed with which the ship is steaming, and on the course angle. The greater the speed and the smaller the "course angle" (bow or stern), the greater the error will be, for instance, at 15 knots with a "course angle" of 40° , the error will amount to about 5 knots. From the above the following deductions may be made:—

1. When firing on coast defences, a ship should manœuvre in "fighting loxodromy."
2. The speed should be the maximum possible.
3. The course angle should be within the limits of the most powerful arc of fire of the ship's guns, and of the smallest are of exposure.
4. The course angle should be, as far as possible, more acute or obtuse within the limits explained above.
5. At each run it is desirable to alter the degree of the course angle.

CHOICE OF PROJECTILES.

As regards the choice of projectiles when firing on coast fortifications, there can be no doubt whatever.

It is evident that A.P. projectiles are of no use whatever unless the fortifications are provided with armoured turrets.

Wherefore, in all other instances, only shells having very large bursting charges should be used, that is to say, high explosive, common (cast-iron), or segment shells.

Experiments in firing at forts at Nicolaief, Kronstadt, and at the Ust-Ijora Ordnance Yard, proved, in the first place, the enormous superiority in their effect, both against concrete as well as against earthworks, of shell scharged with pyroxiline and mélinite over shells loaded with black powder, the latter being acknowledged to be powerless against fortifications of modern construction. Secondly, when firing at concrete covered with a thick layer of earth, shells with delay-action fuzes give incomparably greater results than those not so fitted.

DESCRIPTION OF FIRING.

All batteries, with very few exceptions, have no embrasures, the guns being mounted *en barbette* behind a breastwork. Therefore, when bombarding coast defences, in order to silence them, it is necessary either to destroy the upper portion of the breastwork, and thus uncover the defence and facilitate dismounting the guns, or, without attempting the preliminary work of breaking up the parapet, direct every effort towards the immediate destruction of the guns. The firing should also be so carried out as to ensure as few shells as possible from falling without taking effect, *i.e.*, to make sure that those shells which pass right over the breastwork should, at any rate, burst within the dangerous zone of the battery, on the guns and their crews, and on the buildings situated in rear of the parapet.

This is absolutely necessary, since it would take such a number of shells to hit the crest of the parapet—as will be seen below—before the guns in the battery could be dismounted by direct fire, that it would appear doubtful whether it would be possible to destroy fortifications by direct fire when the latter are armed with guns which could prevent ships approaching sufficiently near without courting certain disaster.

Therefore in order to attain the necessary results, but with a minimum expenditure of ammunition, some method of fire must be discovered whereby the shells that are fired at too high an elevation will be certain of doing some kind of damage or other to the battery, the more so as all the shells that hit the foundation or the thick part of the parapet may be considered to be thrown away.

Dismounting guns, covered by a breastwork, may be done in two ways:—

- a.* By first breaching the blindage in the breastwork.
- b.* Without breaching this blindage.

From the experiments in dismounting guns and concealing breastworks which were carried out at the Ust-Ijora Ordnance Yard, and at Kronstadt, the conclusion may be drawn that very small results will be attained by firing at the blindages in the breastwork with the hope of uncovering the guns mounted in the rear, and thus rendering their destruction an easier matter.

Results have shown that in such cases, in order to put the guns out of action, it will suffice to cut off some of the interior crest of the parapet, which can be done by firing with a mean trajectory. The same experiments demonstrated that to put one gun out of action when screened by a breastwork, about 1,200 cubic feet of earth has to be knocked off the crest and slope of the parapet. By the help of these *data*, it can be approximately estimated how many shells of a certain calibre, charged with certain explosives, will have to hit the slope and crest of a breastwork in order to make a suitable breach.

The size of the breach made in the breastwork by a single shell, fired at a velocity of over 1,000 feet a second, may be reckoned by the formula:—

$$w = 0.816 m \lambda c \quad (4)$$

Where w = size of breach in cubic millimetres,

m = the co-efficient, dependent on the qualities of the soil,

λ = the co-efficient, dependent on the qualities of explosives,

c = the weight of the explosive charge in kilogrammes.

When several shells hit the breastwork close to one another a common breach is made, the size of which can be approximately fixed by the formula:—

$$W = 0.155 \cdot n \cdot w \left\{ 1 + \left[0.7386 - \frac{n}{400} \right] \right\} \quad (5)$$

Where n = number of shells, and the quantity contained in the right-angle brackets is a logarithm.

By these formulas can be approximately reckoned the number of 6-inch shells, which must strike a breastwork in order to make a breach of 1,200 cubic feet.

Taking m to equal 0.85,

$$\lambda = 1.0,$$

$$c = 4 \text{ lbs. (1.6 kilogrammes).}$$

By formula (4) we obtain:—

$$w = 1.1 \text{ cubic millimetre.}$$

Substituting this quantity for w in formula (5) we get:—Since $W = 1,200$ cubic feet, the number of shells $n = 40$, which fully agrees with the corresponding numbers obtained during the experiments mentioned above.

Consequently, if a battery consists of ten guns, in order to put them all out of action, four hundred 6-inch shells must fall on the slope and crest of the breastwork. It remains to fix the probable number of hits on the crest and slope of the breastwork, from the average fighting distances (fifteen to twenty cables), allowing a certain margin for unavoidable errors in judging distances.

The probable number of hits may be estimated by the formula:—

$$P_0 = \frac{1}{100} P \left(\frac{\Delta b}{F_1} \right) \cdot P \left(\frac{l}{E_1} \right) \quad (6)$$

Where

$$\left\{ \begin{array}{l} 1. \Delta b \text{ (a "miss")} = l + \frac{a}{\text{tang. } w}, \text{ while} \\ \quad l = \text{prolongation of the target in the direction of the shots,} \\ \quad a = \text{height of target,} \\ \quad w = \text{angle of descent,} \\ 2. F_1^1 \text{ (relative scattering)} = 2 \Delta \rho X, \text{ and} \\ \quad \Delta \rho X \text{ (probable error in distance)} = \\ \quad \sqrt{\frac{F_1^2}{4} + \Delta_1 X^2 + \Delta_2 X^2}, \text{ where } F_1 = \frac{F}{\text{tang. } w} \end{array} \right.$$

F = relative scattering in experimental firing,

$\Delta_1 X$ = (probable error in distance consequent on a mistake in laying the gun)

$$= X \frac{2 \text{ tang. } \phi}{\text{tang. } w} \cdot \frac{\Delta \phi}{\text{tang. } 2 \phi},$$

$\Delta_2 X$ = error in range,

3. I = breadth of equivalent target,

4. E_1 = (relative scattering) = $2 \Delta \rho S$

$$\sqrt{\frac{E^2}{4} + \Delta_1 S^2}$$

Where $\Delta_1 S = D \text{ tang. } \beta$,

D = distance, and

β = angle error in direction.

For a given gun, of a range of twenty cables, with an error of one cable in the distance, and with the ordinary dimensions of a breastwork, the quantities contained in formula (6) will be:—

$$\Delta b = 22 \text{ sajenes (1 sajene = 7 feet),}$$

$$F_1 = 115 \quad ,,$$

$$I = 117 \quad ,,$$

$$E_1 = 6^1 \quad ,,$$

Wherefore, the probable hits under these conditions will be:—

$$P = 10 \text{ per cent.}$$

Thus, with an error of one cable in a distance of twenty cables, there would be probably ten hits in every hundred shots fired on the slope and crest of the breastwork from a 6-inch gun of 45 calibres.

If we take the fighting percentage of hits as just half what it is in theory, we arrive at the fact that eight thousand 6-inch shells, charged with black powder, would have to be expended before a ten-gun battery could be silenced.

Hence is clear the necessity of so firing that the shells which pass over the breastwork should burst as far as possible in the dangerous zone of the battery, and so assist in the speedy destruction of the work, and, consequently, reduce the expenditure of ammunition.

In the case of a given calibre of gun and shell, there exists a certain dependence between the quantities:— X , ϕ , θ and V (where X = the range, ϕ = angle of departure, V = initial velocity, and θ = angle of descent).

Having found the quotient of two of them, the remainder can be fixed.

For instance, to fix the charge for a given calibre of gun, and the angle of departure, so that the projectile of a given weight, when fired at a certain range, should graze the crest of the breastwork and fall on a given spot. The distance of the point of fall to the foot of the breastwork and the height of the breastwork itself are known. Having fixed the angle of descent, by range X and θ , we find ϕ and V , and knowing V , the weight

of the projectile, the calibre of the gun and the kind of powder, the weight of the charge can also be ascertained.

In a similar fashion may be solved the following problem :—To fix the distance from which it is necessary to fire from a given gun, with a given initial velocity and weight of projectile, so that the projectile, grazing the crest of the breastwork, shall fall at a given spot beyond the breastwork.

According to the angle of descent θ , which is found from the given dimensions of the breastwork, the battery and the initial velocity, we are enabled to fix X and also ϕ .

Thus knowing the extent of the battery's dangerous zone in the direction of fire, and the height of its breastwork, it is quite possible to determine the minimum distance at which a projectile from a given gun, just clearing the breastwork, will fall at the extreme limit of the dangerous zone.

Firing at greater distances, will, from this point of view, be still more advantageous, since the angles of descent will be greater, and consequently the shells will fall closer behind the breastwork and so, on bursting, will cause greater destruction.

This circumstance should be kept in view when concerting plans for manœuvring and firing during a bombardment of coast defences. The minimum distance at which ships in "fighting loxodromy" should approach must depend on the ballistics of the guns both in the battery and in the ships and also on the invulnerability of the latter.

On the other hand, this distance must satisfy the conditions mentioned above on the utility of high-elevation fire.

The maximum distance is solely limited by the accuracy of fire of the ship's guns. All that has been said above applies exclusively to an attack on low-placed shore batteries. Against loftily situated fortifications, a fleet, with its present means of attack (*i.e.*, with direct fire) is well-nigh powerless. The only way out of the difficulty would be to utilise ship's mortars.

In confirmation of the latter view may be quoted the conclusion arrived at by the commission appointed to carry out in France experiments in firing on a coast fort from mortars in the "Dragonne."

The commission decided that the fire would destroy a large coast fort situated at a considerable altitude. The conclusion finally arrived at, founded on special experiments, is that the artillery with which modern iron-clads are armed, can do very little harm to coast defences (except to those batteries that are situated low down), and is absolutely useless against works placed at certain elevations.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Rear-Admirals—Sir G. H. U. Noel, K.C.M.G., to be Admiral-Superintendent of Naval Reserves; A. B. Jenkins to be Second-in-Command of Channel Squadron. Captains—R. W. White to "Rodney"; G. W. Russell to "Hannibal"; R. D. Bruce to "Galatea"; C. J. Sawle to "Bonaventure"; W. Wilson to "Resolution"; C. H. Cross to "Victorious." Commanders—J. M. De Robeck to "Pyramus"; Hon. F. B. Addington to "Wildfire" for "Edinburgh."

Rear-Admiral Sir Gerard Noel, K.C.M.G., who has been selected to succeed Vice-Admiral Sir C. Domville, K.C.B., as Admiral-Superintendent of Naval Reserves, hoisted his flag on the 21st ult. on board the "Alexandra." The second-class cruiser "Charybdis," Commodore Giffard, left Plymouth on the 3rd ult. for North America. The second-class cruiser "Iphigenia" arrived at Portsmouth on the 19th ult. from China. The third-class cruiser "Pyramus" has been commissioned at Sheerness and proceeds to the Mediterranean, where she will take the place of the torpedo-ram "Polyphemus," which has returned to England.

New Floating Dock for Bermuda.—The Admiralty have placed an order with Messrs. Swan and Hunter, Ltd., of Wallsend-on-Tyne, for a Clark and Standfield floating graving-dock for the harbour of Bermuda. This dock, which is 545 feet long, with a clear width of 99 feet, has a lifting power of 16,500 tons, and thus can take in any battle-ship or cruiser in the Navy, and also any auxiliary cruisers, such as the "Campania," and, with the exception of a similar dock now in course of construction for the United States Navy, will be the largest single floating dock in the world. Its design is somewhat similar to, but in many ways an improvement of, the large Clark and Standfield floating dock which was towed out to Havana shortly before the outbreak of the Spanish-American war, and which is now about to be purchased by the United States Government.

New Zealand Coal for the Navy.—The Agent-General for New Zealand, in London, in a recent letter to the *Times*, remarks:—"During the discussion lately of the Naval Estimates in the House of Commons, the attention of the Government was drawn to Australasian coal as a source of supply to the Royal Navy. One or two of the speakers seemed to be under the impression that the coal in question was too foul and smoky for use in ships of war. This, however, is certainly not the case with the coal in the Westport district of New Zealand. I am only giving the result of repeated tests when I say that Westport coal, unlike most coal in the Southern Hemisphere, is as nearly smokeless as the best South Wales—a valuable quality in these days when experts affirm that smokeless coal is nearly as important to our defenders on sea as smokeless powder is to our defenders on land. Then, again, Westport coal is equal as a generator of steam to the highest class of South Welsh. For proof let me remind you of the escape of Her Majesty's ship 'Calliope' in the hurricane at that interesting German possession Apia, in Samoa, some fourteen years ago, when the United States and German men-of-war were driven on shore, and only the English ship steamed out to sea in the teeth of the tempest. The report of Captain Kane, of the

'Calliope,' attributed her preservation to the Westport coal, with which she was fortunately provided." Improvements in Westport harbour, the correspondent continues, make this supply of coal worthy of the Navy authorities' consideration.

Launch.—On the 18th ult., the first-class armoured cruiser "Aboukir" was launched from the yard of the Fairfield Shipbuilding Company at Glasgow. She is a sister ship of the "Cressy," which was launched from the same yard on the 4th December, last year, and the following description will answer for all the vessels of the class:—

The "Aboukir" is one of a class of six similar vessels at present under construction in different yards throughout the country, and is of an entirely new type. Her length between perpendiculars is 440 feet, beam 69 feet 6 inches, and draught 26 feet 3 inches, with a displacement of 12,000 tons, of which 7,860 tons will be absorbed by weight of hull alone.

The main armament will consist of two 9·2-inch breech-loading guns, one firing ahead and the other astern, both being mounted in 6-inch armoured barbettes, with shields. These weapons fire a projectile weighing 380 lbs., with a muzzle energy of 14,520 lbs. Four 6-inch Q.F. guns will be fitted in 6-inch casemates to fire direct ahead, and four to fire astern, each gun being capable of training to fire over a large arc on the broadside. In addition to these there will be four similar guns amidships, two on either side, besides twelve 12-pounders and a large equipment of machine guns. Protection will be afforded by an armour water-line belt 6 inches in thickness, of Harveyized steel, manufactured on the principle introduced by Mr. William Beardmore, of Glasgow, terminating 120 feet from the bow and 90 feet from the stern in transverse bulkheads of 5-inch steel, the depth of the belt extending to 5 feet below the normal load water-line, and 6 feet 6 inches above the load-line, the whole length of the belt being 230 feet. All four sides of the oblong fighting citadel are thus armoured. The armour is backed with 4 inches of teak, so that with the wood sheathing on the outside there is a total thickness of 15 inches. In addition to the side armour, the bow is plated with 2-inch nickel steel, specially hardened, which will even withstand attack from a 6-inch Q.F. gun. This nickel steel plating is 14 feet 6 inches deep at the transverse bulkhead, 120 feet from the bow, and widens out so as to be full depth of the ship at the ram. The protective deck, which is curved downwards at each side to the bottom of the broadside armour, is 1½ inches within the fighting citadel, where the 6-inch side armour forms the chief protection; forward and abaft this it is from 1½ inches to 3 inches thick, and in the centre of the ship the crown of the arch is one foot above the water-line. The main deck above this is also specially strengthened.

The ship will be engined by the builders with two sets of triple-expansion machinery, to develop collectively 21,000-I.H.P., the resulting speed being estimated at 21 knots. The maximum revolutions of the engines will be 160, and the working steam pressure 250 lbs. per square inch. The boilers will be of the Belleville type, thirty in number, and the four compartments into which the boiler space is divided occupy 130 feet of the length of the ship. Provision is made so that the steam when it has done its work in the auxiliary engines will be passed into the evaporators and distillers before going to the condenser, and will thus do the further duty of making fresh water taken from the sea. There will be accommodation in the bunkers for 1,600 tons of coal.—*Naval and Military Record.*

Trial of the "Viper."—On 4th May an event which has been looked forward to with considerable interest in the engineering world for some time past was successfully accomplished. This was the trial of Her Majesty's torpedo-boat destroyer "Viper." This vessel, as is well known, has been fitted with the Parsons steam-turbine, and it was felt that the value of the system would be crucially tested by this Government trial.

The boat itself is of the ordinary destroyer type, excepting that the scantling has been increased in some respects in order to provide against the additional stresses due to the large extra power developed by the machinery. Thus the rudder stock is of solid steel and is $7\frac{1}{2}$ inches in diameter, which is probably 1 inch to $1\frac{1}{2}$ inches more than the dimensions of the majority of these craft. The hull has been built by Messrs. Hawthorn, Leslie & Co., at their shipyard on the Tyne, and the boilers, which are of the Yarrow type, have also been constructed by the same firm. The "Viper" is 210 feet long, 21 feet beam, and 12 feet 9 inches deep. She will have the usual torpedo and gun armament for vessels of her class. The boilers are four in number. These details, however, are not of special importance, the interest in the vessel centring in the engine-room. Here one meets with something quite different to the familiar double row of twin-screw engines, with their four cylinders, between which is the passage from end to end. In place of this, one descends on to a platform stretching right athwartships, where are the large stop valves which control the flow of steam to the turbines, and by which alone the engines are manoeuvred; for there is naturally no valve motion—or, for that matter, no engine valves—nor any reversing gear. Beneath this platform is placed a good half of the engines; that is to say, the part which corresponds to the high-pressure cylinders of an ordinary compound engine. These turbines are, in fact, quite invisible, being stowed away under the floor, and need no attention whether running or standing. A little further aft are to be seen in the bottom of the vessel the larger low-pressure turbines, but the most conspicuous features are the two large cylindrical condensers, which, with their pipes and attachments, occupy the larger part of the room—a fact that will give an idea of the saving in useful space gained by the steam turbine.

After innumerable postponements on account of the weather, it was once more arranged to have the trial, which was to take place on Thursday, 3rd ult.; but on that day it was blowing so heavily and the sea was running so high off the Northumberland coast that the "Viper" remained in the Tyne. Next day—Friday the 4th ult.—it was still blowing hard, but, being off shore, the sea had gone down a good deal, and though the waves were much bigger than was desirable for speed, it was determined to make the trial. The vessel was taken out and steamed up the coast to the measured mile, and commenced her trial runs rather before the full power had been worked up. Rejecting the first runs and taking the following six, it was found that the speed was just on $34\frac{1}{2}$ knots. The best pair of runs gave 34.67 knots. It should be stated that the boat had been in the water some time waiting for her trials, and with a "scribed" bottom would undoubtedly have done better. The wind and rough water were also against high speed.

The mean revolutions on the mile were about 1,050, and the steam pressure ranged from 165 lbs. to 175 lbs. Unfortunately the relief valves were set rather light and a great quantity of steam escaped when the pressure was allowed to run up. The contract load was 40 tons, but 60 tons were actually carried. The displacement at trial draught was 370 tons. As the steam turbine cannot be reversed there is a separate one for going astern, the speed in that direction being about 15½ knots. The air pressure for draught averaged about 3 inches on the water gauge. After the runs on the mile the "Viper" steamed down the Durham coast and completed successfully her three hours' official trial at full speed. The I.H.P. is said to have been 11,000, but, of course, no indicator diagrams can be taken with an engine of this nature. Mr. Parsons has had, however, exceptional means of gaining information on this point in connection with his work in generating electricity, electrical machinery affording perhaps the best steam-engine indicator that can be obtained for this purpose.

There are four lines of shafting in all, and on each propeller shaft there are two propellers; so that there are eight screws in all, or one less than in the "Turbina," that vessel having, it will be remembered, three shafts and three

screws on each shaft. The need for this multiple screw arrangement arises from the fact that the steam turbine to be efficient must work at a high rotating speed. For instance, the turbines of the "Viper" on Friday averaged during the runs on a mile about 1,050 turns a minute, a speed of revolution that may be compared to the 400 turns a minute of the ordinary destroyer, and, this it must be remembered, was considered a remarkable performance when first reached a year or two ago. Unfortunately, when the speed of a propeller blade through the water is very high, the water has not time to close in at the back of it, so that a vacuum is formed, and this naturally does much to retard the turning of the engine and absorbs uselessly a great deal of power. This phenomenon is that known to marine engineers as "cavitation," a new form of propeller disease the diagnosing of which is due to Mr. Sydney W. Barnaby in his experiments on a Thornycroft destroyer. It is cavitation which is one of the chief difficulties that Mr. Parsons has to overcome, and it may be said that some of the most delightful experimental work carried out in recent times has been undertaken by Mr. Parsons in this field.

—*Times*.

The "Belleisle" Experiments.—The firing at the "Belleisle" by the "Majestic" took place off Selsea on Saturday, 26th May, and the following interesting account of a visit to the ship after she was placed in dock at Portsmouth is by a special correspondent of the *Times* :—

"The 'Belleisle' is now in dock at Portsmouth, and as the dock has been emptied an appreciation of the injury inflicted can be by eye approximately measured. The number of small projectiles that struck the vessel in some part or other is very great, and must bear a large proportion to the total number fired, but they are scattered from the head of the foremast to the stern on the water-line. It seems difficult to trace more than half a dozen 12-inch shots as having been truly effective, but those few have been terribly destructive. Perhaps two of them showing clean-cut holes, one in the main centre battery and on the aft, and another, dead amidships, that pierced the hull a couple of feet below the water-line, wrecking the engines and sinking the vessel, would have caused the greatest damage to an enemy. One more cut the spindle of the capstan, and the capstan itself was hurled away. The clear cut round hole in the citadel, where the shell forced its passage, forming an orifice not much larger in diameter than itself, must have annihilated the guns' crews where it burst with murderous effect. The most damaging shell in the after part of the vessel entered somewhat in the same way, but in its passage avoided the principal armament. The under-water blow caused ruin, and the shipwrights had extreme difficulty in stopping the ingress of water sufficiently to enable the vessel to be transported. One 12-inch shell, a gallery shot, caught the upper corner of the citadel on the port after angle and, checked by the massiveness of the target, exploded, blowing off the roof and wrecking the platform on which the conning-tower stands. The other projectiles which struck did wrecking, but not insuperable, damage. The port side of the 'Belleisle' is plastered with the number of 6-inch projectiles, all of which seem to have exploded accurately, but, as the iron-work of the citadel is of no greater resisting power than that of 6-inch hardened steel, now frequently employed to cover the gun emplacements of several modern cruisers, it is clear from these experiments that armour-piercing projectiles must be supplied to our ships for their 6-inch guns, irrespective of the cost of the shells. Projectiles of this description can, undoubtedly be made, and the percentage of misses will be considerable at the distance, probably 4,000 yards, at which naval engagements of the future will be initiated. A vast amount of ammunition will be required; in this respect, at the present moment, our vessels compare favourably with those of other nations, but endeavours should be made to provide much larger supplies of ammunition than are now furnished to each fighting-ship.

"The small guns, from the volume and rapidity of their fire, gained the target in great numbers, but with the varying success that might have been expected.

An element hitherto inadequately foreseen by our gunnery experts militated against extreme accuracy. The dense masses of mingled steam and smoke, arising from the engines' blow-off and from the gaseous productions of the exploding shells, hid the hull from the firers, but the masts badly wounded, yet still standing, showed clearly the position of the ship, and perhaps their altitude, peering over the smoke, tempted a somewhat high delivery of fire. Several shots passed over the hull, many struck the masts high, and the boom boat stowed loftily above the deck was mauled past recognition, but not ignited. In fact, there is no appearance of general ignition of woodwork throughout the vessel and, *pace* the Little-Endians, rivets from their metal might form splinters as dangerous as wood. The after-deck was barely scorched, and the fore-deck was blown off by heavy shells bursting underneath. The rudder and propellers are apparently uninjured, the rigging is cut, but the masts stood, and, had there been fighting tops, they to all appearance would have remained valid to the end. The most interesting study throughout the whole experiment was the action of lyddite. The 12-inch shells, such of them, if any, as were charged with lyddite after penetration, caused wreckage. At least half-a-dozen 6-inch shells, which were evidently so loaded, failed to penetrate, and the radiating stars caused by their contents smothered the side of the 'Belleisle.' The upward action of their bursters sheered off or seriously damaged the guns of the light armament placed high in the vessel and undoubtedly disabled them. It seems probable that some slight recessing of their prominent position would have so far conduced to their efficiency. The repeated blows of 6-inch projectiles on or about the water-line belt, although failing to perforate, had so hammered it, that cohesion between the belt and the structure of the vessel was impaired; hence the dangerous leakage developed in more than one place, notably in the port bow, half way between the stem and the citadel.

"As your correspondent 'Onlooker' states, the experiment might have been improved by greater deliberation, by separating the various stages of attack, and by connoting separate analysis. On the whole, however, the experiment as conducted gives valuable information under more than one head. The restoration adequate for the removal of the 'Belleisle' was a work of great difficulty and was carried out with conspicuous skill, but the appliances were unlimited. Large frameworks of timber strengthened with iron were bolted over the gaping wounds, but collision mats were totally inadequate. Some regret may be experienced that the service nets for defence against torpedo attack were not lowered, as the action on them of exploded lyddite would have been advantageously studied. To hazard a conjecture, it is probable that their disintegration would have caused their remains to foul the propellers."

FRANCE.—The following are the principal promotions and appointments: Vice-Admirals—A. A. Gervais to command of Combined Mediterranean and Northern Squadrons; A. P. L. Bienaimé to be Chief of the Staff of the Combined Mediterranean and Northern Squadrons. Rear-Admiral—J. A. Ingouf to command of Superior Staff School of the Navy. Capitaines de Vaisseau—G. E. Lecomte to "Magenta"; J. P. Noël to "Amiral-Duperré." Capitaines de Frégate—J. P. Nayel to Capitaine de Vaisseau; J. P. Bouthet des Gennetières to "Casabianca." *Le Journal Officiel de la République Française.*

Personnel.—According to present arrangements the Mediterranean Active and Reserve Squadrons are to proceed shortly to Brest or Cherbourg, where they will join the Northern Squadron; the combined fleet, which will be the most formidable France has assembled for many years past in the Channel is to be commanded by Vice-Admiral Gervais, with Vice-Admiral Bienaimé as his Chief of the Staff, and he is to hoist his flag in the "Bouvet," one of the battle-ships of the Mediterranean Squadron, at Toulon, on the 20th inst. If the Tsar visits France, as it is

hoped he will do, the whole fleet is to meet and escort him to the port where he lands; it is also contemplated to have a grand review, and the fleet will also manoeuvre for the benefit of the distinguished personages visiting the Exhibition.

Vice-Admiral Fournier, at present commanding the French Mediterranean Squadron, is to be succeeded at the expiration of his term of command in the autumn by Vice-Admiral de Maigret, who will have Capitaine de Vaisseau Babeau, as his Chief of the Staff; Admiral de Maigret is to hoist his flag in the new first-class battle-ship "St. Louis," and the "Brennus," the present flag-ship, will then leave the Mediterranean and join the Squadron of the North. Vice-Admiral Pottier has also been selected to relieve Vice-Admiral Ménard in command of the Squadron of the North in October and is to hoist his flag on board the "Brennus," which will relieve the present flag-ship, the "Formidable."

The Défenses-Mobiles.—Torpedo-boats Nos. 201 and 203 have proceeded to Corsica, where they relieve Nos. 277 and 178, which go to Bizerta. The *Défense-Mobile* of Corsica now consists of the torpilleurs-de-haute-mer "Challier," "Capitaine-Mehl," "Capitaine-Cumy," and Nos. 97, 99, 123, 124, 126, 127, 139, 180, 185, 191, 201, and 203, while five more new boats, Nos. 233, 234, 235, 236, 237, have been ordered from Toulon with the torpedo-boat "Lévrier." The torpedo-aviso "Casabianca" is to relieve the "Flèche" at Bizerta.

General.—Another sad accident has happened to a torpedo-boat, this time to No. 213, while exercising off Cherbourg; the rupture of a tube caused the flames of the furnace to invade the stokehold, badly burning two men, one of whom succumbed to his injuries. No. 213 was built at Cherbourg last year; she has a displacement of 87 tons, and a crew of 2 officers and 23 men.

The *Moniteur de la Flotte* states that the French War Department has adopted a smoke-producing shell for the 2.9-inch gun, and that the École de Pyrotechnie at Bourges has communicated with the naval authorities at Toulon in view of like provision being made for the ships of the French Navy. In addition to their supply of shrapnel and melinite shells the new field batteries will very soon receive a complement of shells of the new type, intended, as their name indicates, to produce a thick cloud of smoke before the enemy's batteries or firing line in order to mask their view of their opponents' operations.

Some interesting experiments in wireless telegraphy have just been made between the telegraphic post of observation at Porzic, near Brest, and the "Masséna" of the French Northern Squadron. Telegrams were very plainly exchanged at a distance of 35 miles. At the same moment that the "Masséna" was communicating with the land, the "Friant" entered the port and also sent telegrams, which arrived only very slightly blurred by the other.

Expenditure on the Dockyards.—At Cherbourg.—The western end of the break-water is to be lengthened 560 yards, at a cost of 6,500,000 francs (£260,000), and a mole, 700 yards long, is to be built at a cost of 5,300,000 francs (£212,000), at the entrance of the east channel as a defence against the attacks of torpedo-boats. A channel 200 yards wide is to be dredged out in the eastern passage, so that ships can enter at all times of the tide, at a cost of 1,000,000 francs (£40,000). There is to be a new outer port constructed at Houmet with a graving-dock, accessible at all times of the tide; a new large basin is to be built, and other works taken in hand, the aggregate cost of which will amount to 27,000,000 francs (£1,080,000).

At Brest.—The credit demanded for work at this port is 29,750,000 francs (£1,190,000). The new harbour of refuge is to be completed by the construction of a mole at the east end; a new torpedo-boat station for the *Défense-Mobile*, with two new graving-docks are to be built at Lannion; a third dock at the east end of the mercantile harbour, and other works.

At Lorient.—Only 850,000 francs (£34,000) are to be expended here on dredging operations and the lengthening of basin No. 2.

At Rochefort.—5,150,000 francs (£206,000) are to be expended on the lengthening of two of the docks and the construction of a new small one.

At Toulon.—16,800,000 francs (£672,6000) are in all to be expended on this dock-yard. The roadstead is to be deepened, Nos. 1 and 3 docks at Castigneau are to be lengthened to 380 and 650 feet respectively; a new dock is to be constructed at Missiessy, as well as a new fresh-water reservoir and other works; a large sum is to be expended on electric lighting installation. The dredging and lengthening of the docks are to be completed in 1903.

At Corsica.—A sum of 550,000 francs (£22,000) is to be expended on the completion of certain works in connection with the *Défense-Mobile* and the provision of barracks for the men, with workshops, etc.

In Algeria.—Two million francs (£80,000) are to be spent on the lengthening of the dock at Algiers; on work connected with the *Défense-Mobile* at Oran and Mars-el-Kebir, and the construction of a port of refuge at Cape Matifore for the torpedo-boat flotilla.

At Bizerta.—A sum of 38,031,500 francs (£1,521,220) is to be expended:—

1. On the new arsenal, which is to be constructed at the head of the lake at Sidi-Abdallah, which will comprise a wet dock 1,000 yards long and 600 wide, two dry docks 650 feet long, with a third somewhat smaller, workshops, storehouses, barracks, and a hospital.
2. On the organisation of the submarine defences in rear of the entrance of the Goulet in the Sans-Nom Bay, with a strong *Défense-Mobile* and fixed works.
3. The improvement of the actual harbour of Bizerta and of the channel leading to the Goulet. Torpedo-boat stations are also to be established at La Goulette and at Sfax.

At Dakar.—A credit of 10,550,000 francs (£422,000) is required to enlarge the harbour, and for the construction of jetties, a dry dock, workshops, etc.

At Saigon.—Three millions (£120,000) are to be devoted for re-organising and enlarging the storehouses and workshops, and for fixing pontoons along the river.

Naval Education.—The commission on naval education met for the first time on 10th May under the presidency of the Minister of Marine. M. de Lanessan, after welcoming and thanking the members, proceeded to say, that among the points that would be submitted for their consideration would be the courses of study at the Naval School and the School of Application for Aspirants, which are thought to be no longer in harmony with modern requirements. In studying this question, the Minister said they would doubtless be induced to consider whether it would be possible to re-organise the studies in the naval schools so that the students may acquire at the same time the theoretical and practical knowledge necessary both for a combatant and a mechanical officer and thus to bring together these two branches of officers, and if possible obtain their fusion in the future in a single corps, a reform that has been pressed for some time by naval experts.

The commission would also be asked to consider whether the recruiting of officers for the Navy can be made more general throughout France, instead of being confined as it is at present to the naval ports and chief naval families, with a view to popularise the Navy and make it more generally known throughout the country.

They would further be called upon to reform the nautical schools that have been created at the naval ports to enable petty officers to qualify themselves for the rank of officer. Not much use hitherto has been made of these schools, the candidates being mostly too old and of the mature age of 32 to 35 years. It is therefore necessary to facilitate and encourage the entry of much younger men,

and if some plan or scheme to allow of this can be found it will attract those who for the present are kept away by the almost impossibility to them of obtaining the epaulettes of an officer.—*Le Yacht* and *Le Temps*.

Submarine Boats.—In a recent issue of the *Grande Revue*, M. W. de Duranti has an interesting article on submarine torpedo-boats. The author points out that a vessel of the kind was in existence a century ago, but at that time, the invention was considered to be inhuman, and a far too abominable engine of destruction to be utilised by civilised nations. An American of the name of Fulton had built a submarine boat he called the "Nautilus," with which he offered the French authorities to "blockade the Thames and cut off the commerce of London." The reports on the "Nautilus" were highly favourable but the Minister of Marine, Admiral Pleville-le-Pelly, declared that his conscience would not allow him to have recourse to so terrible an invention. Fulton was met with the same objection when he proposed to Cafarelli, the Maritime Prefect at Brest, to destroy an English frigate with his boat. Cafarelli refused to allow him to attempt the feat, on the score that "this manner of making war on the enemy would be visited with such reprobation, that the persons who should have essayed it and who should have failed" (a delightful touch, it may be said in parenthesis) "would be hanged."

Coming to the submarine torpedo-boats of to-day, M. de Duranti contends that the problem of their submerging them at will has been completely solved. He also affirms that the difficulty of endowing the boats with "vision," that is, of enabling the crew to see the vessel they propose to attack, has been satisfactorily overcome by the invention of Lieutenants Daveluy and Violette. At present the French Navy possesses three finished submarine boats, the "Gustave Zédé," "Gymnote," and "Morse," and the construction of six others has been begun this year. All these boats are of practically the same type. The great objection to them is that their range of action is exceedingly limited, owing to the speedy exhaustion of the accumulators that supply them with their motive power. To obviate this source of weakness a new class of boat has been devised, represented so far by a single specimen, the "Narval." The feature of the "Narval" is that when it is desired to cover long distances she is navigated by steam on the surface of the water. When desired, she can be submerged, and is then propelled by electricity. While travelling on the surface she can renew her supply of electricity without making for a port. She carries sufficient coal to steam 624 miles at 8 knots. The trials of the "Narval" are not yet finished, but they have so far been satisfactory.

M. de Duranti points out that the fact France will soon be in possession of a small flotilla of submarine boats does not constitute an advance of any moment over rival nations. He is convinced that the secret of submarine navigation, once entirely solved, it will almost immediately be an open secret, it being impossible to prevent an invention of the kind from leaking out.

GERMANY.—The following are the principal promotions and appointments which have been made: Rear-Admirals—von Arnim to command of Second Squadron and Third Division; Freiherr von Bodenhausen to command of Fourth Division in Second Squadron; Fritze to Inspector of First Naval Division. Kapitän zur See—Freiherr von Maltzahn to Rear-Admiral; Müller for service at the Ministry of Marine; Breusing as Chief of the Staff of the Manœuvre Squadron; Graf von Moltke to "Fürst Bismarck"; Schröder to Director of the Naval School; Kirchhoff to be Second-in-Command of Cruiser Squadron; Da Fonseca-Wollheim to "Vineta." Fregatten-Kapitän—Kretschmann, Coerper, Obenheimer, von Basse, Krieg, Ehrlich, Meyer, Pohl, to Kapitän zur See; Grapow to be Chief of the Staff to Rear-Admiral von Arnim; Freiherr von Schimmellmann to "Heimdall"; Wentzell to "Siegfried"; Reitzke to "Skorpion"; Koch to com-

mand of First Torpedo-boat Flotilla; Bruch to command of Second Torpedo-boat Flotilla; Wilde to "Odin"; von Bassewitz to "Bussard"; von Mittelstaedt to "Tiger"; Derzewski to "Nixe."—*Marine Verordnungsblatt.*

Home and Foreign Squadrons. The Manœuvre Fleet.—This fleet will, as last year, according to present arrangements, be under the command of Admiral von Koester, Commander-in-Chief at Kiel, the General-Inspector of the Navy, with Captain Breusing as his Chief of the Staff; the Admiral will hoist his flag on board the new battle-ship "Kaiser Wilhelm II.," at present attached to the Second Division of the First Squadron.

The fleet will be composed as follows :—

First Squadron under command of Vice-Admiral Hoffman.

First Division.

First-class Battle-ships—"Kurfürst Friedrich Wilhelm" (flag-ship of Commander-in-Chief); "Wörth," "Brandenburg," "Weissenburg."

Third-class Cruiser—"Hela."

Second Division.

First-class Battle-ships—"Kaiser Friedrich III." (flag-ship of Rear-Admiral Büchsel); "Kaiser Wilhelm II." (to hoist flag of Admiral von Koester).

Second-class Battle-ships—"Sachsen," "Württemberg."

Third-class Cruiser—"Jagd."

Second Squadron under the command of Rear-Admirals von Arnim and von Bodenhausen will be composed of two divisions, the Third and Fourth Divisions, which will be formed out of the following :—

Coast-defence Battle-ships—"Ægir," "Siegfried," "Odin," "Heimdall," "Frithjof," "Hildebrand."

The Scouting Squadron will probably be composed of the small cruisers—"Hela," "Blitz," "Jagd," "Grille."

There will be two torpedo-boat flotillas, made up of two divisions each.

First Torpedo-boat Flotilla, under command of Corvette-Captain Koch, with pennant in division-boat D 9.

A (V.) Division.

Division-boat D 7.

Torpedo-boats—Nos. 67, 68, 69, 70, 71, 73.

B (IV.)

Division-boat D 5.

Torpedo-boats—Nos. 43, 44, 45, 46, 47, 49.

Second Torpedo-boat Flotilla, under command of Corvette-Captain Bruch, with pennant in division-boat D 10.

C (III.) Division.

Division-boat D 8.

Torpedo-boats—58, 59, 60, 61, 62, 63.

D (II.) Division.

Division-boat.—Not yet detailed.

Torpedo-boats—90, 91, 92, 93, 94.

Armoured Gun-boat Division, under command of Corvette-Captain Reitzke.

Armoured gun-boats—"Skorpion," "Natter," "Mücke," "Crocodil."

According to latest information the following is the disposition of ships on foreign stations :—

In China.

Cruiser Squadron, under command of Vice-Admiral Bendemann.

First-class armoured cruiser—"Fürst Bismarck" flag-ship on arrival on station.

Second-class cruisers—"Hertha" (temporarily flying flag of Commander-in-chief); "Hansa" (flag-ship of second-in-command); "Kaiserin Augusta."

Third-class cruisers—"Irene," "Gefion."

On American Station.

Second-class cruiser—"Vineta."

Third-class cruiser—"Geier."

First-class gun-boat—"Luchs."

In Mediterranean.

Special-service vessel—"Loreley."

Australian Station.

Third-class cruisers—"Cormoran," "Seealder."

Surveying ship—"Möwe."

East African Station.

Third-class cruisers—"Schwalbe," "Condor," "Bussard."

East Asian Station.

First-class gun-boats—"Jaguar," "Iltis," "Tiger."

West African Station.

First-class gun-boat—"Habicht."

Special service vessel—"Wolf."

Strength of the Personnel.—According to the "Rangliste" of the Imperial Navy, corrected up to the 8th May, the following are the numbers of the officers and their different ranks on the Active List of the Navy:—2 admirals, 6 vice-admirals, 12 rear-admirals, 51 captains, 100 commanders, 194 captain-lieutenants, 515 lieutenants, 303 midshipmen, and 155 cadets. The marine battalions have as their staff:—1 inspector of marine infantry, 2 battalion commanders, 11 captains, 10 first lieutenants, and 20 lieutenants. The medical staff consists of:—1 medical director-general, 2 inspector-generals, 26 deputy inspector-generals, 56 staff-surgeons, 68 assistant surgeons. Accountant Department:—13 staff paymasters, 99 paymasters, 22 assistant paymasters, and 43 clerks. The Engineering Department:—4 chief engineers, 22 staff engineers, 54 engineers first class, and 64 engineers. The officers' corps has been increased by an addition to the lieutenants' list of 53, to the midshipmen of 63, to the cadets of 35, to the engineers of 16, and to the doctors of 11. The seamen divisions and boys number:—Chief warrant officers 60, warrant officers 91, and 12,818 petty officers, seamen, and boys, being an increase of 613 over last year's strength; the dockyard divisions are 7,741 strong, 5,720 of whom form the engine-room *personnel*, an increase of 586 over last year; the torpedo detachments number 2,926, an increase of 129 over last year, and are made up of 1,407 seamen and 1,519 engine-room staffs. The whole strength of the Navy of all branches stands this year at 29,757 officers and men, as against 28,204 last year. To meet the demands for men required by the proposed augmentation of the fleet, it is proposed to add to the *personnel* between the years 1901 and 1920, 1,212 officers (Military Branch), 283 engineers, 188 doctors, 122 paymasters, and 33,746 men.

The Matériel.—The fleet consists at present of:—12 battle-ships, 8 coast-defence ships, 13 armoured gun-boats, 10 large and 25 small cruisers, 5 gun-boats, 16 training and school ships, 8 special-service and 5 harbour-service ships, making a total of 102 ships, exclusive of destroyers, torpedo-boats, and the numerous ships under construction.

The Estimates.—The following are the principal items of the Estimates for the year 1900, exclusive of any charges arising from the New Navy Augmentation Act :—

NAVY ESTIMATES, 1900.

	Proposed for the Financial Year, 1900.	
	Marks.	£
Imperial Admiralty, including the "General Staff of the Navy"	1,302,290	= 63,743
Observatories	319,765	15,651
Accounts	331,425	16,222
Administration of Justice	71,230	3,486
Divine Service and Schools	79,862	3,909
Naval Personnel	16,539,365	809,562
Ships in Commission	17,272,790	845,462
Victualling	1,122,261	54,932
Clothing	309,386	15,144
Barrack Administration, etc.	2,342,777	114,673
Lodging Allowance	1,268,782	62,104
Medical	1,196,600	58,571
Travelling Expenses, Freight Charges, etc.	2,485,183	121,644
Training Expenses	318,519	15,591
Maintenance of Fleet and Dockyard Establishments	20,442,830	1,000,628
Ordnance and Fortification	6,633,674	324,702
Accountant-General's Department	501,822	24,563
Pilotage and Surveying Services	516,010	25,257
Miscellaneous Expenses	853,080	41,756
Administration of Kiau-chau Protectorate	38,782	1,898
Total	73,946,433	3,619,498

SPECIAL ORDINARY ESTIMATES.

Shipbuilding Programme for the Financial Year, 1900.

For the Construction of—

	Proposed for the Financial Year, 1900.	
	Marks.	£
First-class battle-ship "Kaiser Wilhelm der Grosse" (Ersatz "König Wilhelm"), 4th and final Vote	4,000,000	= 195,790
Battle-ship A 3rd instalment ("Kaiser Barbarossa")	4,000,000	195,790
" " "Kaiser Karl der Grosse" (B), 3rd Vote	4,000,000	195,790
Large cruiser A, 3rd Vote	3,500,000	171,317
Small cruiser "Nympe" (A), 3rd and final Vote	230,000	11,258
" " "Niobe" (B),	230,000	11,258
Battle-ship C, 2nd Vote	4,800,000	234,949
" " D, "	4,800,000	234,949
" " E, "	4,800,000	234,949
Small cruiser C, "	1,800,000	88,106
" " D, "	1,800,000	88,106
Battle-ship F, 1st Vote	2,500,000	122,369
" " G, "	2,500,000	122,369
Large cruiser B, "	2,000,000	97,895
Small cruiser E, "	1,300,000	63,632
" " F, "	1,300,000	63,632
Gun-boat A, "	500,000	24,473
One Torpedo-boat Division, 2nd and final Vote	2,474,000	121,096
" " " 1st Vote	2,400,000	117,475
Total	48,934,000	2,395,203

SUMMARY.

	Proposed for the Financial Year, 1900.	
	Marks.	£
Ordinary Permanent Estimates	73,946,433	= 3,619,490
Shipbuilding	48,934,000	2,395,203
Armaments	17,986,000	880,669
Torpedo do.	2,615,000	128,696
Other Items	3,754,490	183,773
Extraordinary Expenditure	5,200,000	254,528
Total	152,435,923	7,462,359

Launches.—The first-class armoured cruiser "A," which was laid down on December 1st, 1898, was launched at Kiel on the 22nd March, and received the name "Prinz Heinrich." She is of the same type as the "Fürst Bismarck," but nearly 2,000 tons smaller. Her dimensions are as follows:—Length, 396 feet; beam 64 feet 8 inches; displacement 8,868 tons (against the 10,660 tons of the "Fürst Bismarck"). Protection is afforded by a belt of armour of 4 inches nickel steel, which runs the whole length of the ship and reaches to the height of the battery. Her armoured deck varies from 2 inches in thickness to 2·8 inches. Her three engines are vertical triple-expansion, and are supplied by 14 water-tube boilers of the Dürr type, developing 15,000-I.H.P., and giving her a speed of 20·5 knots. Her bunkers will hold 950 tons. Her armament will consist of two 9·4-inch guns in turrets; ten 6-inch Q.F. guns—four in turrets and six in casemates, the turrets and casemates being protected by 6-inch hard Krupp steel; ten 3·52-inch Q.F. guns protected by shields; ten 1½-inch Q.F. guns, four machine guns, and four torpedo-tubes, one forward and one aft and two submerged on the broadside. Her complement is 528 men, with 43 additional if she flies an admiral's flag.

The new first-class battle-ship "A" was launched from the Schichau yard at Dantzig on the 21st April, and received the name of "Kaiser Barbarossa." Her dimensions are as follows:—Length over all, 412·5 feet; between perpendiculars, 379·5 feet; beam, 65 feet 8 inches; draught, 26 feet; displacement, 11,080 tons. The armour-belt extends from the ram aft for three-quarters of her length; it is 13 feet broad, and varies from 6 inches to 11·8 inches in thickness. The armour deck runs the whole length of the vessel, and is 3 inches in thickness. Her three engines are vertical and triple-expansion, with four cylinders, and are to develop 13,000-I.H.P., giving her a speed under forced draught of 18 knots, steam being provided by water-tube boilers of the Schulz pattern. Her ordinary supply of coal is 650 tons, but she can carry 1,000 tons if necessary. Her armament consists of four 9·4-inch guns in two turrets protected by 9·8-inch armour, eighteen 6-inch Q.F. guns, twelve in casemates and six in turrets, with 6-inch armour; twelve 3·52-inch Q.F. guns protected by shields; twelve 1·48-inch Q.F. guns, twelve machine guns, and six torpedo-tubes, one in the bows and four broadside submerged, and one aft above water. She will have a complement of 655 men.

The New German Navy Bill.—This Bill has now been passed by the Reichstag, the only vital alterations being the postponement for the present of six large cruisers and seven small ones for foreign service. Under this new Navy Act, as amended, the Establishment of ships for the German fleet is to be increased by:—

Section I.—(a) Ready for service:—

- 1 flag-ship for the fleet.
- 2 squadrons each of 8 battle-ships.
- 2 large cruisers } as scouting-vessels for the
- 8 small cruisers } fleet in home waters,

- (b) As a Reserve:—
- 2 battle-ships,

The Establishment will be decreased by 2 divisions each of 4 coast-defence ships, these ships being the eight small vessels of the "Siegfried" class, which, however, are to be accounted as battle-ships until they are replaced.

Section II.—Ships in Commission.—As a consequence of this increase, the ships of the fleet in home waters shall be kept in commission upon the following principles:—

1. The first and second squadrons constitute the active fleet and the third and fourth squadrons the reserve fleet.
2. Of the battle-ships and cruisers of the active fleet, all shall be in commission; of those of the reserve fleet, half of the battle-ships and cruisers.
3. Individual ships of the reserve fleet not in commission may be commissioned for the manœuvres.

There are at present 17 battle-ships on the active list of the Navy, inclusive of the four ships of the "Brandenburg" class, which it is intended under the new Act to replace during the next sixteen years, and there are eleven new battle-ships of the new programme still to be laid down, five being either completed or in various stages of completion, viz., the "Kaiser Friedrich III." "Kaiser Wilhelm II." (both these now in commission), "Kaiser Wilhelm der Grosse," "Kaiser Karl der Grosse," and "Kaiser Barbarossa." As, however, the oldest vessels, the four of the "Sachsen" class, have recently been modernised as far as their main structure would allow, it is not proposed to begin building any ships to replace existing battle-ships or armoured coast-defence ships, which rank with them, until 1906. During the years 1901-5, ten new battle-ships, two in each year, are to be laid down, and these will be actual additions to the Navy; an eleventh addition will be laid down in 1909. So that as soon as the battle-ships laid down in 1905 are finished, the German Navy will be only one battle-ship short of the proposed full number. This number is 34, consisting of four divisions of eight and two flag-ships. No new coast-defence ships will be built, and existing ones will be replaced by the new battle-ships laid down from 1906 to 1916; four of these being laid down in 1906-8, and the remaining thirteen between 1910-15. Of the eighteen new large cruisers it was proposed, under the Bill as originally drafted, to build, ten will be required to replace old ones and eight will be actual additions. Of these eight, six are for foreign stations, but their construction has not been sanctioned, and only two for the home squadrons; they are to be laid down during the years 1904-9. Of the 45 small cruisers, 29 are to replace old ones, and 16 will be actual additions. Seven of the 16 are for foreign stations, but, like the large ones, the Reichstag has refused the vote for them, while nine are for the home squadrons; one is to be laid down in 1901 and 15 in the years 1904 to 1909. When all the vessels laid down during the years 1901 to 1909 are finished, the German Navy will be at its full strength as regards numbers, but not as regards power. The new ships which are intended to replace old ones will not be all complete until 1920, and they will be more powerful than the vessels they are to replace, and will require larger crews.

During the discussion on the Bill, Admiral Tirpitz, the Secretary of State for the Navy, stated that the armour of the new battle-ships is to consist of nickel-steel plate, the total cost being estimated at £13,000,000. The whole of it is to be furnished by the two firms of Krupp and Stumm. Some members of the Reichstag having suggested that the Government should establish works of their own or invite competition, Admiral Tirpitz replied that this was impossible now, owing to the enormous cost of setting up such establishments. With reference to Mr. Goschen's statement that England built her ships twenty per cent. cheaper than other countries, which means that Germany is now spending £12,400,000 more than England would do for the same number of ships, the Admiral said that in

England shipbuilding yards were well equipped, materials and coal were cheaper, and there was sharper competition among builders.—*Neue Preussische Kreuz Zeitung*, and extracts from the *Etat für die Verwaltung der Kaiserlichen Marine auf das Rechnungsjahr 1900*, and *Entwurf einer Novelle zum Gesetze, betreffend die deutsche Flotte*, vom 10. April, 1898.

UNITED STATES.—*Annual Report (1899) of the Chief of the Bureau of Navigation*.—The most striking recommendations in the annual report of Rear-Admiral Crowninshield, Chief of the Bureau of Navigation, the important features of which we print, are for an increase of 10 per cent. of officers in all grades, the abandonment of the present receiving-ship system, and large appropriations for building up the Naval Academy. A remarkable showing in the increase of native-born sailors is presented, and the policy of enlisting landsmen for service as sailors after training on cruising-ships is also spoken of at length. Admiral Crowninshield, in rather vigorous language, laments the failure of Congress to reward Admiral Sampson, whom he terms "the greatest among these," meaning officers in front of Santiago, and the captains and other officers of the North Atlantic fleet, who rendered conspicuous service. Admiral Sampson and these officers have not so much as a medal, which was given to each of the hundreds who shared in a victory "won in a more propitious hour."

The total enlistments during the year were 7,302 men and 968 apprentices, and 31,346 were rejected for physical disability and other causes. On 30th June last there were 14,501 men in the Service, of which 7,380 were native-born, 2,441 naturalised, 1,290 alien, but declared, 622 alien residents of the United States, 544 alien non-residents, 2,002 native-born apprentices, and 187 foreign-born apprentices; 3,500 of this number were serving under continuous service. Over 56 per cent. of the petty officers are native-born, over 32 per cent. of the foreign-born are naturalised, and 88 per cent. of the whole number are citizens of the United States, while 65 per cent. of the remainder have declared their intention to become citizens. Over 62 per cent. of the other enlisted men are native-born, over 12 per cent. of the foreign-born are naturalised, and 75 per cent. of the whole number are citizens; of the remainder, 48 per cent. have declared their intention to become citizens. Over 91 per cent. of the apprentices are native-born. Over 64 per cent. of the whole enlisted force are native-born. During the year 14,271 enlisted men and apprentices were discharged. 107 men and 11 apprentices died during the year. All but 29 of the 856 temporarily commissioned have been discharged, 458 new commissions have been issued under the Personnel Bill, 38 enlisted men have been retired, 75 claims for service pensions have been allowed.

For these Congress should be asked to appropriate \$800,000 (£160,000) for seamen's quarters at League Island and Mare Island Navy Yards. The old receiving-ship "Vermont" should also be abolished, the temporary wooden buildings now on the Cob Dock, annexes of the "Vermont," should be removed, and \$800,000 (£160,000) expended for 2,000 men and officers. The old receiving-ships "Wabash" at Boston and "Franklin" at Norfolk should also be supplanted by barracks, at a cost of \$400,000 (£80,000) for each yard. As shown before, "we are now losing the interest on more than twice the sum required, \$2,400,000 (£480,000), maintaining an expensive system of hulks with large crews and unsatisfactory results. We are in this matter far behind every other nation. It is hoped that this obstacle to a proper development of our enlisted force will be removed by Congress."

Hope is expressed by Admiral Crowninshield that with the apprentice system more completely developed, with the completion of new barracks at San Francisco and Newport, the supply of boys to make good the number in the seamen branch of our enlisted force will be sufficient. The fact that it has been difficult to enlist a sufficient number of seamen to supply the Navy has led the Bureau to enlist

several hundred native-born young men from 21 to 26 years of age as landsmen, and it is proposed to give these eight to ten months' training at sea on cruising vessels with the idea of making them men-of-war's men.

The "Hartford," with 350 young men on board, has been sent around Cape Horn into the Atlantic. The "Lancaster" has begun a similar cruise from New York to the West Indies. The steamer "Dixie" is being fitted at the League Island Navy Yard for a similar purpose, and as soon as she can be made ready some 400 landsmen will be embarked on board her and sent on a cruise to be trained for man-of-war's men. Enlistment authorised by the Personnel Bill will allow as much as one year for this training, and still give time for these men to make a full cruise of three years in a regular ship of war.

The scarcity of officers and the increase in the number required for necessary routine duty has compelled the Bureau to withdraw many officers from the assignments which, while they tend toward progress and development, must yet be pushed into the background in the struggle for bare existence.

The Personnel Bill failed to change the six year course at the Academy to four years. The Bureau recommends that this serious omission be corrected, and that the largely increased demands for officers for important service be met by increasing the number of officers in each grade by 10 per cent. and by providing for the four years' course at the Naval Academy. Another change made in the Bill in the last days before it became a law discriminated in the matter of pay against the Navy as compared with the Army and Marine Corps. This state of affairs is submitted for appropriate action.

Admiral Crowninshield concludes his report with these observations on the shameful failure of Congress to promote and reward Admiral Sampson and the Captains and other officers of his fleet during the Spanish war.

"Another condition of affairs discouraging to proud and ambitious officers who have risked and accomplished is the ragged and irregular result that seems an inevitable consequence of any effort to give permanent or substantial official recognition to bravery, gallantry, or devotion. Before the outbreak of the war you addressed to the officers of the North Atlantic fleet, through the Admiral, a letter, from which the following is an extract: 'Each man engaged in the work of the inshore squadron should have in him the stuff out of which to make a possible Cushing; and if the man wins, the recognition given him shall be as great as that given to Cushing, so far as the Department can bring this about.' Every effort of the Department to redeem this solemn pledge has been balked. Of the officers who served in the North Atlantic waters three have been confirmed in the recognition urged by the Department—two because their cases were presented at propitious moments, the other because of a misapprehension. The rest numbering among them every gallant captain at Santiago on 3rd July, and all the brave captains of the ever-ready gun-boats, numbering among them officers who risked in many desperate expeditions—cable cutting, as spies, seeking information, blocking and blockading harbours, scouting—numbering among them all those who hesitated not, and including at the head of all the able and determined officer who planned, worked out, and executed the whole campaign, and who finally consummated the one victory which was vital to the enemy—he and all the rest have absolutely nothing. The greatest among these has not as much as the medal which was given to each of the hundreds who shared in a victory won in a more propitious hour."

The Bureau renews its recommendation that the State Naval Militia organisations be federated into a national reserve.

The table of estimates submitted are as follows: For the Naval Academy, including the new scheme of improvements, \$2,228,813 (£445,762); for the support of the Navigation Bureau, \$66,648 (£13,329); for the naval service these items: Transportation, etc., \$80,000 (£16,000); gunnery exercises, \$12,000 (£2,400); outfits for naval apprentices, \$112,500 (£22,500); naval training

station, California, \$30,000 (£6,000), and for buildings, \$34,750 (£6,950); naval training station, Rhode Island, \$99,500 (£19,900); Naval War College, \$9,200 (£1,840); Naval Home, \$76,425 (£15,285). Total, \$2,749,836 (£549,966).

New Coaling Station.—There is now completed and ready for operation at New London, Conn., the first modern naval coaling station established by this Government, and one of a series that it is proposed shall extend from Frenchman's Bay, Me., around to New Orleans. The New London station is to be a depôt simply for supplying war-ships with coal, and the yard, which was once an important repairing station, has been entirely abandoned. Admiral Endicott reports that it is one of the most complete stations of its capacity in the world. Though the storage capacity is limited to 10,000 tons, coal can be loaded in to the shed-like structure while war-ships are taking it out alongside dock. The system of loading and unloading is most complete, saving a vast amount of labour and time with buckets on travelling cranes that transport the coal from building to ship, or from scow to building. Work has begun already on a pier, which will give a depth of 30 feet at low water. Work is progressing well on the big station at Dry Tortugas, which is to have a capacity of 28,000 tons. It will be one of the most important on the coast. Frenchman's Bay, Me., where a coaling station is to be established, is well fortified, and the harbour is sheltered, with great depth of water. A Board will shortly be appointed to visit that section and make a selection of site out of the five which offer advantages. Other sites are in contemplation on the Atlantic coast. With the new stations and the great navy yards, where coal can always be procured, within a few years the coaling facilities of the Navy will be ample to meet every demand of an enlarged establishment.

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS FOR

MAY, 1900.

The following appointments are made to the Staff of the Army in South Africa :—Major-General Sir H. E. Colville, K.C.M.G., C.B., to be a Lieut.-General on the Staff to command the 9th Division, with the local rank of Lieut.-General whilst so employed. Major-General W. F. Kelly, C.B., to be a Brigadier-General on the Staff whilst holding the position of D.A.G. Colonel C. W. H. Douglas, A.D.C., to be a Major-General on the Staff to command the 9th Brigade, with the local rank of Major-General whilst so employed. Colonel A. S. Wynne, C.B., to be a Major-General on the Staff to command the 11th Brigade, with the local rank of Major-General whilst so employed. Lieut.-Colonel and Brevet Colonel H. L. Smith-Dorrien, D.S.O., the Sherwood Foresters (Derbyshire Regiment), to be a Major-General on the Staff to command the 19th Brigade, with the local rank of Major-General whilst so employed. Major and Brevet Colonel R. G. Broadwood, 12th Lancers, to be a Brigadier-General on the Staff to command the 2nd Cavalry Brigade, with the local rank of Brigadier-General whilst so employed. Lieut.-Colonel J. R. P. Gordon, from 17th Lancers, to be a Brigadier-General on the Staff to command the 3rd Cavalry Brigade, with the local rank of Brigadier-General whilst so employed. Lieut.-Colonel and Brevet Colonel C. P. Ridley to be a Brigadier-General on the Staff to command the 2nd Brigade Mounted Infantry, with the local rank of Brigadier-General whilst so employed.

Lieut.-Colonel W. W. Ward, the East Yorkshire Regiment, to be Colonel. Major-General (local Lieut.-General) Sir G. B. Wolseley, K.C.B., commanding troops in Madras, to be Lieut.-General. Colonel W. F. Vetch, Assistant Director-General of Ordnance, Head Quarters of the Army, to be Major-General. Major-General E. A. Gore to be Lieut.-General. Colonel (temporary Major-General) H. F. Grant, C.B., Inspector-General of Cavalry in Great Britain and Ireland, to be Major-General. Colonel C. M. H. Downing from a Colonel on the Staff for Royal Artillery to be a Major-General on the Staff for Royal Artillery in South Africa, and to have the local rank of Major-General whilst so employed. Colonel G. Henry from a Colonel on the Staff in India to be a D.A.G. in India, with the local rank of Brigadier-General whilst so employed. Colonel R. F. N. Clarke, Chief Ordnance Officer, to be Principal Ordnance Officer in South Africa. Colonel H. Gunter from h.p. to be Colonel to command the 63rd Regimental District (the Manchester Regiment). Lieut.-Colonel A. F. Barrow, C.M.G., D.S.O., I.S.C., a temporary A.G.M.G. in India, is granted the substantive rank of Colonel in the Army. Brevet Colonel E. A. Bruce from Lieut.-Colonel h.p. to be Colonel to command the 19th Regimental District (the Princess of Wales's Own Yorkshire Regiment). Colonel Binfield Wemyss, Bengal Infantry, to be Major-General. Lieut.-General G. D. Barker, C.B., Governor and Commander-in-Chief, Bermuda, to be General. Colonel (local Major-General) C. C. Egerton, C.B., D.S.O., A.D.C., I.S.C., is granted the local rank of Lieut.-General in India whilst officiating as a Lieut.-

General on the Staff in that country. Lieut.-Colonel Sir H. E. McCallum, K.C.M.G., R.E., to be A.D.C. to the Queen and to have the brevet rank of Colonel in the Army. Colonel W. W. Hopton Scott, C.B., Bengal Infantry, to be Major-General. Colonel G. M. Fox, ret. pay, to be Inspector of Gymnasia. Colonel W. Wood to be Colonel to command the 44th Regimental District (the Essex Regiment). Brevet Colonel D. A. Blest to be Colonel to command the 87th Regimental District (Princess Victoria's Royal Irish Fusiliers). Major-General Sir A. Hunter, K.C.B., D.S.O., to be a Lieut.-General on the Staff to command the 10th Division, Field Force, South Africa, with the local rank of Lieut.-General whilst so employed. Major-General the Hon. N. G. Lyttelton, C.B., to be a Lieut.-General on the Staff to command the 4th Division, Field Force, South Africa, with the local rank of Lieut.-General whilst so employed. Major-General Sir H. C. Chermiside, G.C.M.G., C.B., to be a Lieut.-General on Staff to command the 3rd Division, Field Force, South Africa, with the local rank of Lieut.-General whilst so employed. Colonel (local Major-General) R. Pole-Carew, C.B., to be a Lieut.-General on the Staff to command the 11th Division, Field Force, South Africa, and to have the local rank of Lieut.-General whilst so employed. Colonel Ian S. M. Hamilton, C.B., D.S.O., to be a Major-General on the Staff, Field Force, South Africa, with the local rank of Major-General whilst so employed. Colonel E. T. H. Hutton, C.B., A.D.C., to command the 1st Brigade Mounted Infantry, Field Force, South Africa, with the local rank of Major-General whilst so employed. Lieut.-Colonel and Colonel Douglas M. B. H., Earl of Dundonald, C.B., M.V.O., to be a Major-General on the Staff to command the 3rd Cavalry Brigade, Natal, Field Force, South Africa, with the local rank of Major-General whilst so employed. Colonel W. G. Knox, C.B., to be a Major-General on the Staff to command a Brigade, Field Force, South Africa, with the local rank of Major-General whilst so employed. Lieut.-Colonel and Brevet Colonel F. W. Kitchener, the Prince of Wales's Own (West Yorkshire Regiment), to be a Brigadier-General on the Staff to command a Brigade, Field Force, South Africa. Major and Brevet Colonel J. G. Maxwell, D.S.O., to be a Major-General on the Staff to command a Brigade, Field Force, South Africa, with the local rank of Major-General whilst so employed. Lieut.-Colonel and Brevet Colonel C. D. Cooper, from the Royal Dublin Fusiliers, to be a Major-General on the Staff to command a Brigade, Field Force, South Africa, and to have the local rank of Major-General whilst so employed. Lieut.-Colonel and Colonel I. R. Jones, Scots Guards, to be a Major-General on the Staff to command the Guards' Brigade, with the local rank of Major-General whilst so employed. Colonel (temporary Brigadier-General) G. Simpson, C.B., I.S.C., to command a 2nd Class District in India with the temporary rank of Brigadier-General whilst so employed. Colonel W. Hailes, I.S.C., to be a Colonel on the Staff in India. Lieut.-Colonel J. F. Burn-Murdoch, 1st Dragoons, to be a Brigadier-General on the Staff to command the 1st Cavalry Brigade, Natal, Field Force, South Africa, with the local rank of Brigadier-General whilst so employed. Major and Brevet Lieut.-Colonel J. M. Grierson, M.V.O., R.F.A., to be Colonel. General Sir John Davis, K.C.B., to be Colonel Royal Sussex Regiment. Major-General and Hon. Lieut.-General G. S. Young, C.B., to be Colonel South Staffordshire Regiment. Colonel (temporary Major-General) T. B. Tyler, Inspector-General of Artillery in India, to be Major-General. Lieut.-Colonel G. J., Lord Playfair, R.G.A., to be Colonel.

INDIA.—Improvements in the equipment of the Royal Horse and Field Batteries in India are to be carried out forthwith. As regards the Horse Artillery guns, sufficient for three batteries have been indented for. These will be Mark III. wire guns, 12-pounders of the latest pattern, with a light carriage, and all the recently improved equipment. In the matter of field artillery, the guns will leave the spade attachment, and also Grenfell sights, while the breech mechanism will be improved, so that only one motion will be required

in locking the breech. These changes will admit of laying and loading being done simultaneously. The tray system of ammunition supply will also be introduced.

The issue of the .303 rifle to the native regiments in the Field Army will involve an immediate increase in the number of rounds of cordite ammunition manufactured at Dum Dum and Kirkee, and a corresponding decline in the out-turn of black powder cartridges for the Martini rifle. There is a big reserve of both kinds always kept in stock; and in spite of the quantity of .303 ammunition sent to South Africa, the eighteen regiments now receiving the magazine rifle will not require to be stinted in the matter of cartridges. Between 16,000 and 17,000 rifles are now being issued, and the ammunition for instruction purposes alone should be at least 100 rounds per man, if proficiency is to be gained with the new weapon. But the provision of several million rounds extra will not seriously tax the resources of the factories in India. The manufacture of Martini cartridges can be gradually discontinued as the ammunition at present with the regiments of the Field Army can be returned into the arsenals, to be added to the reserves already there. New machinery can be put up, and a year or so hence black powder should disappear, as it has disappeared in England so far as the Army is concerned. The .303 rifle with cordite will hold the field, and by the time that the whole of the Native Army has been re-armed the explosive should be in course of manufacture at the Indian factory in the Neilgherries.—*Pioneer Mail*.

SOUTH AFRICA.—The statistical and general report of the Army Veterinary Department for the year ended 31st March, 1899, which has recently been issued as a Blue-book, contains an interesting report from Veterinary-Lieut.-Colonel I. Matthews, A.V.D., on the health of horses in South Africa. Veterinary-Lieut.-Colonel Matthews arrived in South Africa on 23rd June, 1898, with instructions to investigate thoroughly the causes of past mortality among horses, and to suggest measures that would avoid or minimise it in future. For this purpose he visited each garrison in South Africa, staying some weeks in each, and afterwards periodically revisited them. The predisposing and actual causes of past mortality are enumerated by him as follows:—

"1. Exposure to this tropical climate without stables, sometimes without nosebags.

"2. Watering and working animals in the early morning before the sun had dispersed the mist.

"3. The great number in all units that broke loose at nights and wandered into unhealthy localities.

"4. The exhausted condition produced by climate in January, February, and April in Natal, when all animals lose much of their natural energy.

"5. The use of freshly-cut grass as bedding for stabled animals.

"6. The scarcity of water at Maritzburg, where sometimes only 23,000 gallons could be obtained instead of 75,000, and its obvious impurity at Ladysmith.

"7. The two mounted infantry companies at Maritzburg were nearly dismounted by this disease, one losing 92 cobs and the other 83, out of a total of 123 each.

"I think inexperience in stable management, the want of second blankets, sometimes of necessary line gear, contributed to these fatal results.

"8. Acclimatisation was a cause; nearly all had been imported in the previous spring.

"9. When horse sickness became so prevalent and fatal in March, many would have been saved if they had been removed to Nottingham Road or Mooi River, as was done this year.

"10. The unhealthy season and the hardships to which the animals were exposed left many that survived in a condition unfit for service."

Veterinary-Lieut.-Colonel Matthews says that the widespread existence of glanders in South Africa calls for active and co-operative legislation by all the Governments of the country; so far Natal alone has adopted really effective measures for its suppression. At present it is a constant source of danger to the efficiency of Army horses and mules.

He attributed the cases of horse sickness at Ladysmith to the horses breaking loose at nights and wandering into the unhealthy bend of the Klip River near the camp, for when this was avoided the cases ceased to occur. It is noted as speaking well for the management of the brigade division, Royal Artillery, that they had not a single case in 1897-88 while at Ladysmith, and the mounted infantry company, Royal Irish Rifles, had only one.

Veterinary-Lieut.-Colonel Matthews states that he feels sure the planting of screens of blue or red gum trees around the stables, or even the camps, would, under the conditions in Natal, with careful stable management, eradicate the cause of the disease. He draws attention to the excellent results obtained in 1897-98 by sending the animals to healthy localities. The general health became good, and no cases occurred from the specific disease of the country except two, evidently contracted on the march.

FRANCE.—The new De Bange and Piffard rapid-fire gun possesses certain original features, and is distinguished from other field pieces by the peculiar arrangement of the breech closure and the manner in which the recoil takes places.

The gun, which is of steel, is of 3-inch calibre and weighs 748 lbs. It consists of a tube, reinforced by a jacket carrying a trunnion sleeve and presenting at the rear a lodgment for the breech screw. The latter is, as usual, provided with interrupted threads, but, instead of being cylindrical or in the form of a truncated cone, is ogival. As the centre of the directing ring of the ogive is on the axis of rotation of the obturator, the disengagement of the screw is effected without the necessity of withdrawing it longitudinally, a single motion of the actuating lever causing it to swing back clear of the breech. By acting upon this lever, the screw is first turned the eighth of a revolution necessary to unlock it; and then the action continuing, the screw swings back and the breech is opened. It is during this second action that the extractor comes into play and throws out the empty cartridge case.

The firing pin is cocked automatically at the moment of the opening of the breech. The arrangement of the trigger is such that it is rendered immovable as long as the breech is not entirely closed, and so no premature firing is to be feared.

The carriage weighs 1,144 lbs. Of the parts that rest upon the ground, the stock and wheels, the former is rendered immovable by a spade, and the latter by block brakes or skids. The gun rests through its trunnions, upon a bronze cradle. When the recoil occurs, the piece and its cradle slide upon the cheeks. The extent of a recoil is limited by a brake. In order to prevent the rising that would tend to occur in a fire at small angles, the surface upon which the sliding takes place is curvilinear, the result being that the movable part exerts at every moment a pressure that prevents the rising of the carriage. Through such an arrangement of the slides, the gun and its cradle are lifted, and when the recoil has terminated, tend to resume their first position under the action of gravity. It follows from this that it is not necessary to have a system of recuperators, as in the majority of field guns. The firing brake may be either a hydraulic or friction one, as may be desired. These two brakes have a circular form. In the hydraulic one, the recoil causes the rotation of a drum filled with liquid in which is placed a stationary piece that forms a resistance to the displacement of the liquid. In the friction brake, the friction is produced by two grooved plates that are pressed against each other by Belleville springs.

The vertical pointing of the gun is obtained by means of a toothed arc, which is supported by a cradle and actuated by hand-wheel fixed upon the stock. The

pointing in direction, when the spade is buried in the earth, is easily rectified by the displacement of the axle in the box that serves as a cross-brace to the cheeks.

The ammunition chests are so arranged as to have the effect of preventing the distortion of the cartridges, and of allowing the piece to be easily supplied. The cartridges are suspended therein vertically and can be brought one after another opposite the lid of the chest. The cartridge supports are carried by springs designed to reduce the shocks that are likely to occur during carriage. There are 36 cartridges in the chest of the fore-carriage and 60 in that of the after-carriage.

The weight of the charge is 22 ozs. of powder. The projectile weighs 14 lbs., and has an initial velocity of 1,738 feet.

The experiments made with this gun have given very satisfactory results from the standpoint of accuracy and rapidity of fire.—*La Nature and Scientific American*.

The name of General Borgnis-Desbordes will always be associated with the organisation of the native reserves of Indo-China. The reservists are recruited from amongst discharged soldiers or pensioners. Four recruiting districts have been formed, corresponding to the four Tonkin rifle regiments.

1st District.—Consists of the provinces of Hanoi, Sontoy, Hung-Hoa, and Hung-Yen.

2nd District.—Consists of the provinces of Hai-Dzuong, Thai-Binh, Hai-Phong, and Quang-Yen.

3rd District.—Consists of the provinces of Bae-Ninh, Bae-Giang, and Thai-Nguyew.

4th District.—Consists of the provinces of Nam-Dinh, Ninh-Binh, and Ha-Nam.

Reservists of the artillery, engineers, and of the cavalry squadron are recruited from the whole of the Indo-Chinese territory.

The Annamite riflemen have their reserves in Indo-China.

The length of service in the reserve is for five years for re-engaged men and eight years for discharged soldiers. The cadres keep their non-commissioned officers, and may even obtain new ones from the reserve.

Pensioners are only called out in the event of mobilisation. Discharged soldiers have to undergo three periods of instruction of fifteen days each spread over the eight years they serve in the reserve.

Native reservists are exempt from the personal tax and from payment either in money or in kind other than those due to their village. They have given them, on discharge, a card of identity, which is viséed every year by the civil authority, and which establishes their regular position with regard to the administration. Each rifle regiment has a dépôt company, which undertakes the supervision of the reservists. Each regiment has a reserve battalion, which is officered in war-time by the complementary cadres which are attached in peace-time to the special services.

This organisation, which is extremely simple, provides, under excellent conditions, for the supply of recruits in time of war. Material is only required at Tonkin to make the colony impervious to all attacks.—*La France Militaire*.

The *Echo de Paris* states that the question of arming the French cavalry with lances is still under discussion. The following information is given as to the arms carried by the cavalry of other nations:—In England 31 cavalry regiments carry sabre and carbine; six regiments of lancers have the lance in addition; seven regiments of dragoons have recently been supplied with the lance for the front rank only. In Italy 24 cavalry regiments carry sabre and carbine, the latter with a bayonet a foot long; the 10 lancer regiments carry a lance in addition. In Germany the 93 cavalry regiments are all armed with sabre, carbine, and lance. In Austria the 42 cavalry regiments carry sabre and carbine; the 11 regiments of Uhlans which used to carry a lance have ceased to do so. In Russia the 119 cavalry

regiments carry sabre and carbine ; the 58 dragoon regiments have no lance, but their carbine has a bayonet about 5 inches long ; in 38 regiments of Cossacks the men in the front rank carry the lance ; the 15 regiments in the Caucasus have no lance ; all the Cossacks carry a pistol and poignard ; in the six regiments of the guards the men in the front rank carry the lance.

GERMANY.—Paymasters, who, in Germany, have the payment of all the troops in their hands, have the rank of officers, but are non-combatants. They are divided into seven classes according to their rate of pay, which is as follows :—

1st class	...	...	...	drawing	2,225	marks a year.
2nd	„	...	...	„	2,375	„
3rd	„	...	...	„	2,625	„
4th	„	...	...	„	2,875	„
5th	„	...	...	„	3,125	„
6th	„	...	...	„	3,375	„
7th	„	...	...	„	3,625	„

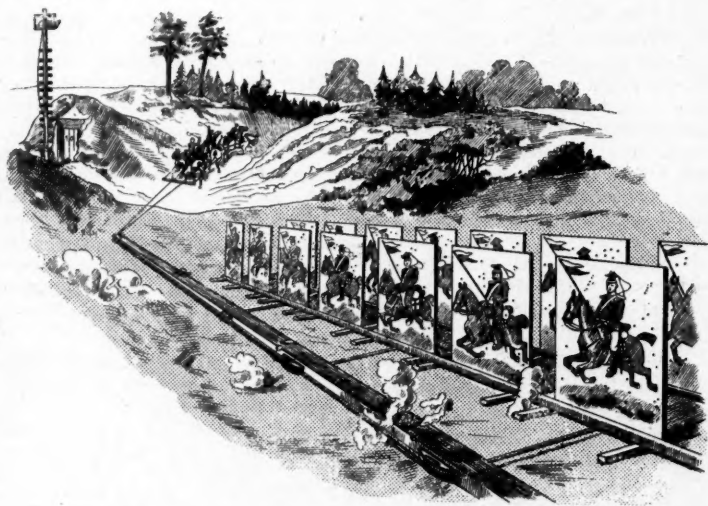
Paymasters are selected from the result of an examination amongst assistant paymasters. These latter rank with sergeant-majors and are recruited from amongst non-commissioned officers and men who have at least two years' service, and who have gone through a fairly long course of instruction in the commissariat and pay offices. Latterly promotion has been very slow in the Pay Department, and many probationers leave the Army after twelve years' service, which gives them a bonus of 1,250 marks and a post in a Government office. In order to increase the present rate of recruits for the department, the Emperor has just decided that one place in five shall be reserved in Government military offices for paymasters who attain a certain seniority. They may thus hold appointments amounting to 4,500 marks. In addition, paymasters of the three higher classes may obtain the honorary rank of staff-paymaster, and may wear, as a special badge two gold rosettes, instead of one, on the shoulder straps and epaulettes.

According to Article 21 of the law on military obligations, foreigners who are naturalised Germans, are compelled to serve according to their age conditions. This law having been interpreted in different ways, the Minister of War, after consultation with the Minister of Justice and the Chancellor of the Empire, decided to apply to naturalised Germans the same treatment accorded to recruits who have not joined their regiments, viz., they must complete a full term of service as long as they have not reached the age of 31. When they have passed that age or if they may have had valid reasons for exemption, they would be enrolled either in the recruiting reserve, or in the Landsturm. It may be remarked as regards recruits who have not joined their regiments, that corps commanders may give leave to such of them as in their opinion may be conducive to the good of the Service.—*Bulletin de la Presse et de la Bibliographie Militaires.*

In the German Army special care has always been given to target practice, and real service begins only after due preparation in aiming and shooting—guns provided with sights and blank cartridges being used—and in exercises designed for teaching true distance values. The latter is, of course, most instructive when carried on in open country, where the distances from objects aimed at are unknown, and can be ascertained only by actual firing. In such work, only loaded cartridges are used. But even this did not fill all requirements, as the distance from stationary targets was easily learned after a few trials, a defect which was specially noticeable in cavalry practice, for in a real engagement the cavalry advances on its opponent very rapidly, and the positions of the objects aimed at are changed each second. In order to overcome this difficulty, movable targets have been arranged on skids drawn forward by means of ropes attached to horses

driven at full speed. The ropes run over rollers secured to a heavy beam. The arrangement of these targets is clearly shown in the illustration. The infantry is marched out and drawn up in columns, those in front kneeling during the shooting. The men aim at the horses' legs, but balls which miss the aim and strike the ground are deflected so as also to be dangerous to the horses. After the practice is over the targets are inspected and the good hits counted, even those shots which did not strike the horse or the rider but did hit the target being included, and the company which had the best count receives due praise as well as prizes.

Another branch of service which is now receiving attention in Germany is the running of telegraph lines by cavalry. Heretofore, in time of peace, there were only two schools in Germany for the instruction of military telegraphers, one in Berlin and one in Munich, but during the past year two divisions of troops have been set apart specially for this service, and certain changes are to be made in the schools.



The duty of the telegraph battalion in time of war is, of course, to run lines between the operating corps and headquarters, or between the advance posts and the divisions, which are from half-a-mile to five miles behind them, so that all the observations made by the former can be transmitted with the rapidity of lightning to the latter. A division of cavalry instructed with the construction of a telegraph line consists of about eight to fifteen men, according to the length of the line, and each of several men carries about twelve light telegraph poles, each provided at one end with a sharp iron point, and at the other end with an iron hook, while one man of the corps carries a roll of wire in his hands or on his back. The poles are stuck in the ground about 160 feet apart, while the unwinding wire is placed in the hooks by soldiers armed with long poles provided at the ends with forks. Of course, trees, etc., can be utilised in the place of the poles described. In this manner a very effective line can be constructed in a remarkably short time.

The foregoing description will give some idea of the great care given to all details in the thorough drilling of German soldiers.—*Scientific American*, *Die Illustrierte Zeitung*, and *Das Buch für Alle*.

ITALY.—In order to prevent strangers from approaching fortified positions on the frontier, and from photographing or taking sketches of them, the Prefect or Turin has recently published an order, which took effect from the 1st May last, forbidding people in the frontier district from approaching the fortifications nearer than the finger-posts, which are placed in the vicinity of these works, unless provided with a permit from the Commander of the 1st Army Corps.

This prohibition does not refer to landowners or house proprietors whose property is situated on the frontier. These must be provided with a pass signed by the Commander of the Works.

It is forbidden to use, and even to carry, any photographic apparatus without special permission, both on the frontier and also in the vicinity of the most advanced works. The necessary authority may be given by division commanders. No authority is necessary for the transport by rail of photographic apparatus. They may even be taken by carriage, provided they are in packing cases. It is absolutely forbidden, in any case, without by special permission of the military authorities, to use field-glasses, etc., in the neighbourhood of the frontier.—*La France Militaire*.

The *Italia Militare e Marina* states that the Italian Captain Cei, inventor of the automatic-firing rifle recently described in the *Times*, has now patented a new form of projectile suitable for guns and rifles of all kinds. The form is ellipsoidal, enabling the projectile to overcome the resistance of the air in such a manner as to reduce the trajectory almost to a straight line, and thus doing away with the necessity for the back sight. The wound made by the shot is perfectly clean, without any sign of laceration.

The *Italia Militare e Marina* publishes a full report of a lecture on wireless telegraphy, delivered at Bari, before a crowded audience, by the Italian engineer Emilio Guarini. Signor Guarini is the inventor of an automatic repeater by which a message despatched from one wireless telegraphic station would be repeated automatically by the receiving station and so passed on to another station, and yet another and another according to the distance it is desired the message should be sent. The lecturer stated that he and Signor Marconi were convinced that the present limit of distance between station and station of 72 miles for wireless telegraphy could be extended to 300 miles over sea, and to 150 miles over land; and that possibly, therefore, eighty stations would be sufficient to carry a message round the world. The great value of the automatic repeater is shown in the fact that if a despatch took an hour in delivery, and the operator at the receiving station had to wait that time before he could begin to pass the despatch on to the next station, eighty hours at least would be required to send the message through the series of eighty stations, whereas, by introducing the automatic repeater at each station, very little more than the hour would be necessary for the same purpose, and for through messages no intermediate operators would be required.—*Times*.

RUSSIA.—The summer manœuvres in the Russian Army begin on the 1st May, in some districts even in the middle of April, and terminate for the most part at the end of August, but the special cavalry manœuvres in the Vilna and Warsaw military districts take place in September. In the Turkestan military district the manœuvre period ends on the 1st October. The summer manœuvres for the various branches of the Service are divided into three periods, viz., single, special, and general manœuvres. The single manœuvres, in the course of which the troops are put through their musketry, and each arm prepared by itself for the general manœuvres, end at the beginning of August, and in the northern districts in the middle of July. The special artillery manœuvres take place chiefly in May and June, the principal ones taking place at Rembertov (Warsaw), 76 batteries,

or 564 guns; at Krasnoe-Selo, 56 batteries, or 224 guns; at Oranyi (Vilna), 40 batteries, or 274 guns; and at Brest-Litovsk, 33 batteries, or 250 guns. At the special cavalry manœuvres 76 per cent. of all the cavalry take part. The chief cavalry manœuvres contemplated are at Warsaw for 57, at Krasnoe-Selo for 49, at Oranyi for 48, and at Meshibushje for 48 squadrons or sotnias. The Engineers have their special manœuvres, for the most part, brigaded, but in the Vilna, Warsaw, and Odessa military districts the Engineer pontoon battalions have their manœuvres on the principal rivers.

At the general manœuvres 88 per cent. of the infantry, 93 per cent. of the cavalry, and 96 per cent. of the artillery will take part, the numbers being greater this year than any other by 10 battalions, 23 squadrons, and 3 batteries. The number of infantry battalions assembled in camp at the various places are as follows:—At Krasnoe-Selo, 60 battalions; at Warsaw, 49 battalions; at Brest-Litovsk, 43 battalions; at Tiflis, 41 battalions; at Meshibushje, 40 battalions; at Kiev, 38 battalions; at Tschugujew, 38 battalions; at Moscow, 33 battalions; and at Schubkowo, 32 battalions.

Grand and march manœuvres with considerable masses of troops will take place this year:—

1. For portions of the troops of the Moscow, Kiev, and Odessa military districts, from the 22nd to 29th August, an eight days' grand manœuvres in the presence of the Tsar, in the government of Kursk, at which 153 battalions, 77½ squadrons or sotnias, and 83 batteries (the 10th, 13th, and 17th Army Corps, the 34th Infantry Division, the 4th Light Infantry Brigade, the 2nd, 3rd, and 4th Reserve Artillery Brigade, the 1st Cavalry and 2nd Combined Cossack Divisions, the 2nd Independent Cossack Sotnia, and the Twer Cavalry Junker School) will assist.
2. In the Petersburg Military District twelve days' manœuvres will be held at the beginning of August, of the troops in camp at Krasnoe-Selo, which will conclude with three days' manœuvres in the neighbourhood of Luga, in which all the troops of the district not required for guard duties, as well as the 3rd Finland Regiment, the Finland Dragoon Regiment, as well as the combined Finland light infantry battalions (altogether 95 battalions, 56 squadrons, and 42 batteries), will take part.
3. In the Vilna Military District, in the second half of August, a twelve days' march manœuvre between Oranyi, Grodno, and Liva with, altogether, 60 battalions, 30 squadrons or sotnias, and 31 batteries of the IInd, IIInd, and IVth Army Corps.
4. In the Warsaw Military District, at the end of August, an eight days' manœuvre with the forcing of the passage of the River Weichsel, between Warsaw and the mouth of the River Veliza, at which 158 battalions, 91 squadrons or sotnias, and 54 batteries, drawn principally from the VIth, XIVth, and XIXth Army Corps, the 1st and 2nd Cavalry Corps, and the 3rd Guards Infantry Division, will take part.
5. In the Kiev Military District, in the second half of August, sixteen days, corps manœuvres of the XIth and XIIth Army Corps, which will conclude with grand manœuvres in the neighbourhood of Kremenez-Ostrog, Starokonstantinow, Proskurow, and Woloczisk, of 72 battalions, 56 squadrons or sotnias, and 35 batteries. —*Die Vedette.*

A lecture delivered a while ago at the Kronstadt Naval Institution by Staff-Captain Rejepo, of the General Staff, dealt with the Transvaal War. After dealing generally with the political conditions that led to the war, the lecturer said the campaign might be divided into three periods:—1. The operations of General White.

2. Those of General Buller. 3. The current operations under Field-Marshal Lord Roberts. He entered in detail into these in each of the four theatres, northern, central, western, and eastern. Discussing the organisation of the English Army, he called attention to the totally irrational (*sic*) method of recruiting by voluntary enlistment, in consequence of which, it is interesting to learn, the English soldier had not the martial spirit or steadfastness possessed, for instance, by the Russians! In conclusion, he prophesied that the further successes of the English, in spite of the large numbers employed, would cost them heavy losses, and scarcely satisfy the dreams of the English capitalists, so eager to profit by the gold mines of the Transvaal.

On the 9th March last the Pavloski Regiment completed its mobilisation by a war march followed by field firing. At 10 a.m., the regiment, in field service order paraded in column of route by half sections, and after having defiled before the Grand Duke Vladimir commenced its march, and at 12.30 p.m. was halted for some time, having been first formed up as a reserve. At 2 p.m. orders for the field firing were received, the targets having, in the meantime been arranged on the ranges of the 145th Infantry Regiment at Novo-Tekerkassi, about two miles from there the halt was made. The idea was as follows:—"An enemy in considerable force advances from the South-East on Malaia-Okhta. The regiment should take up a position between Malaia-Okhta and Malaia-Yablonovka, and hold the enemy until the arrival of reinforcements." The 3rd Battalion, told off for the fighting line, was immediately put in motion and before arriving at the ranges of the 145th Regiment deployed in attack formation. At 2.30 p.m. the two companies in the firing line opened fire on a battery of the enemy which was in sight, as well as on the enemy's supports and distant reserves. The 4th Battalion was then pushed to the front to prolong the line to the right, and the 1st and 2nd Battalions, which formed a general reserve were placed in a ravine behind the right flank. In the meantime, on the appearance of a fresh column of the enemy debouching from the wood, the commander of the 3rd Battalion deployed his last two companies. At 3.15 p.m. the chief of the district staff, who directed the manœuvres, informed the officer commanding the regiment that the enemy had been checked, and had decided not to push the attack. The companies of the first line thereupon immediately opened magazine fire on the enemy's firing line and supports; finally the whole regiment, with drums beating, sprang forward for the assault with the bayonet. During the day the regiment covered 20 miles, without a single man falling out.—*La France Militaire*.

SWITZERLAND.—According to a *précis* by the *Revue Militaire Suisse*, in a recent number, of the report of the Swiss Military Department for the year 1899, 16,773 recruits belonging to the 1898 class were trained during the course of the year. The 1899 class consisted of 17,037 men who should commence their service in 1900. On the 1st January, 1900, the effective of the Federal Army was as follows:—

	Selected by lot.	Landwehr 1st levy.	Landwehr 2nd levy.	Total.
Infantry	113,617	40,063	21,261	174,941
Cavalry	4,551	3,391	—	7,942
Artillery	20,442	11,105	2,536	34,083
Engineers	5,586	4,467	—	10,053
Hospital Corps	4,928	2,869	745	8,542
Administration Corps	1,451	817	33	2,301
Cyclists	301	77	—	378
Total	150,876	62,789	24,575	238,240

At the same time the Landsturm had on its rolls 277,007 men.

NAVAL AND MILITARY CALENDAR.

MAY, 1900.

- 1st (T.) General Ian Hamilton drove Boers from Houtnek and captured 26 prisoners.
- " " Ammunition Column, 8th Division
Regimental Staff R.E., 8th Division
5th Field Company R.E.
Draft 10th Hussars
Detachment No. 10 General Hospital
Remounts, Cavalry and R.A. } Arrived at Cape Town from England in the "British Prince."
- 2nd (W.) Severe fighting near Bloemfontein. Boer losses heavy.
- " " Draft Army Service Corps
" 2nd Bn. Royal Warwick Regiment
" 2nd Bn. Lancashire Fusiliers
" 2nd Bn. Royal Highlanders
Remounts R.A. and Mounted Infantry } Arrived at Durban from England in the "British Princess."
- " " Draft Army Service Corps
" 2nd Bn. West Yorkshire Regiment
Draft 1st Bn. Royal Irish Regiment
" 2nd Bn. Gloucester Regiment
Remounts Cavalry
" Royal Artillery
Detachment R.A.M.C.
Details } Arrived at Cape Town from England in the "Persia."
- 3rd (Th.) H.M.S. "Charybdis" left Plymouth for North American station.
- " " Brandfort, 40 miles north of Bloemfontein, occupied without much opposition.
- " " Volunteer Engineers (Electrical)
No. 62 Company Middlesex Yeomanry
No. 74 Company Irish
No. 77 Company Manchester
No. 72 Company Roughriders
No. 76 Company
No. 78 Company
No. 79 Company
Drafts, details
20th Yeomanry Bn. Staff
Base Depot
Welsh Hospital } Arrived at Cape Town from England in the "Canada."
- 4th (F.) Sir A. Hunter crossed the Vaal at Windsorton.
- " " Royal Artillery
No. 50 Company Hants Yeomanry
No. 60 Company Irish (3) Yeomanry
No. 61 Company Irish (2) Yeomanry
No. 65 Company Leicester (2) Yeomanry
Nos. 67, 70, 71, and 75 Companies
Sharpshooters
17th Yeomanry Bn. Staff
18th Yeomanry Bn. Staff } Arrived at Cape Town from England in the "Galeka"

- 5th (Sat.) General Ian Hamilton prevented the junction of two Boer forces near the Vet River.
- 6th (S.) Winburg occupied by the British.
- " " Sir A. Hunter, after defeating the enemy, joined hands with General Paget near Warrenton.
- " " Lord Roberts crossed the Vet River and occupied Smaldeel Junction. Maxim gun and 25 prisoners taken. Quantity of rolling stock and forage found.
- " " 60 men of the Chinese Battalion were attacked on the frontier by 2,000 Chinese, who were repulsed.
- 7th (M.) British victory near Fourteen Streams.
- 8th (T.) Draft 6th Dragoon Guards
 " 5th Lancers
 " Northumberland Fusiliers
 " 2nd Bn. Cheshire Regiment
 " 1st Bn. Highland L.I.
 " Militia
 Detachment R.A.M.C.
 Remounts, Cavalry and R.A. } Left England for South Africa in the "Pindari."
- 9th (W.) Draft 2nd Bn. Norfolk Regiment
 " Army Service Corps
 " Army Ordnance Corps
 Remounts
 Detachment R.A.M.C. } Arrived at Cape Town from England in the "Narrung."
- 10th (Th.) Lord Roberts drove the Boers from their position, extending for 20 miles, at the Zand River.
- " " 1st Bn. Leinster Regiment (Royal Canadians)
 Draft 2nd Bn. East Kent Regiment (The Buffs)
 Draft 2nd Bn. Royal Lancaster Regiment
 Draft 2nd Bn. Lincoln Regiment
 Army Service Corps
 Detachment R.A.M.C. } Arrived at Cape Town from England in the "Dilwara."
- 11th (F.) XIXth Yeomanry Bn. Machine Gun Section
 Details
 Volunteer Company Royal Irish Rifles
 Volunteer Drafts
 Draft Strathcona's Horse
 Detachment R.A.M.C. } Left England for South Africa in the "Assaye."
- " " Draft 2nd Bn. Gloucester Regiment
 " 9th Lancers
 " 18th Hussars
 " R.E.
 Detachment R.A.M.C.
 Remounts Cavalry and R.A. } Left Ireland for South Africa in the "Mahratta"
- 12th (Sat.) Lord Roberts entered Kroonstadt without opposition.
- " " Boers forced an entry in Mafeking, but were surrounded, 50 being killed, 17 wounded, and Commandant Eloff and 90 men captured.
- 14th (M.) Sir Redvers Buller turned the Boers out of the Biggarsberg.
- 15th (T.) Sir Redvers Buller occupied Dundee.
- " " Sir Leslie Rundle occupied Mequatling's Nek and Modderspoort, in the Orange Free State.

- 15th (T.) British troops re-occupied Glencoe.
- 16th (W.) Launch of first-class armoured cruiser "Aboukir," from Fairfield Yard, Govan, Glasgow.
- " " Sir A. Hunter invaded the Transvaal, occupied Christiana, and hoisted the British flag there.
- " " Dannhauser, Natal, was occupied by the British.
- " " Draft Army Service Corps
- " " 1st Bn. Royal Sussex Regiment
- " " 1st Bn. Cameron Highlanders
- Detachment R.A.M.C.
- Remounts
- " " Draft 5th Dragoon Guards
- " " Royal Inniskilling Fusiliers
- " " Royal Engineers
- " " Post Office Corps
- Detachments R.A.M.C.
- " " A.P.C.
- Cavalry Remounts
- 17th (Th.) General Ian Hamilton occupied Lindley.
- " " Lord Methuen entered Hoopstad; 2 Boer generals and 40 men surrendered.
- " " Draft R.G.A.
- " " 2nd Bn. Royal Irish Rifles
- " " Militia
- " " Draft 8th Hussars
- " " Royal Scots
- Detachment R.A.M.C.
- 18th (F.) Mafeking was relieved by a British force under Colonel Mahon.
- " " Mounted Infantry Company
- Draft 13th Hussars
- " " 1st Bn. Suffolk Regiment
- " " 2nd Bn. Seaforth Highlanders
- Detachment R.A.M.C.
- Remounts Cavalry and R.A.
- 19th (Sat.) H.M.S. "Iphigenia" arrived at Portsmouth from China.
- " " Lord Dundonald moved to Laing's Nek.
- " " Draft 2nd Bn East Yorkshire Regiment
- " " 2nd Bn. Bedford Regiment
- " " 2nd Bn. Cheshire Regiment
- " " 2nd Bn. South Wales Borderers
- " " 1st K.O. Scottish Borderers
- " " 1st Bn. East Lancashire Regiment
- " " 1st Bn. West Riding Regiment
- " " 1st Bn. Oxford L.I.
- " " 1st Bn. York and Lancaster Regiment
- " " 2nd Bn. Wiltshire Regiment
- " " Draft R.A. (Artificers)
- " " R.E. (Telegraphists)
- " " 2nd Bn. Worcester Regiment
- Post Office Corps
- Remounts

Arrived at Cape Town from
England in the "Ulster-
more."

Left England for South
Africa in the "Mont-
eagle."

Arrived at Cape Town from
England in the "Orotava."

Left England for South
Africa in the "Cavour."

Left England for South
Africa in the "Manchester
Merchant."

Arrived at Cape Town from
Ireland in the "Cheshire."

Arrived at Cape Town from
England in the "Montfort."

- 19th (Sat.) Imperial Yeomanry Base Depôt
Volunteer Drafts
Section Scottish National Hospital
Detachment Welsh Hospital } Left England for South
Africa in the "AvonJale
Castle."
- 20th (S.) A Squadron of Bethune's Horse were ambushed near Vryheid.
British casualties 66.
- " " Sir Charles Warren defeated the rebels near Douglas, Griqualand.
- " " 600 Remounts arrived at Cape Town from England in the "Hortensius."
- 21st (M.) A.S.C.
Draft 10th Hussars
Draft Royal Artillery
Detachment R.A.M.C.
Remounts Cavalry and R.A. } Left England for South
Africa in the "Ottoman."
- 22nd (T.) General Ian Hamilton reached Heilbron. General Broadwood
captured 15 Boer wagons.
- 23rd (W.) Lord Roberts arrived at Rhenosster River, the enemy having
previously abandoned their entrenched position.
- " " Remounts Cavalry and R.A. and Mounted Infantry left England for
South Africa in the "Maori King."
- " " Draft 2nd Bn. Grenadier Guards
" 3rd " "
" 1st Bn. Coldstream Guards
" 2nd " "
" 1st Bn. Scots Guards
" 2nd " "
" Royal West Surrey Regiment
Details } Left England for South
Africa in the "Britannic."
- 24th (Th.) Launch of first-class battle-ship "Pobieda" from the Baltic Yard,
St. Petersburg, for Russian Navy.
- " " Launch of first-class cruiser "Aurora" from New Admiralty Yard,
St. Petersburg, for Russian Navy.
- 27th (S.) Vaal River was crossed by Lord Roberts' main army at
Vereeniging.
- 28th (M.) Orange Free State was annexed to the British by Lord Roberts, and
renamed the Orange River Colony.
- " " In China the "Boxers" marched on Peking, after defeating the
Imperial forces and murdering officials.
- " " Draft 2nd Bn. Royal Fusiliers
" 1st Bn. Leicestershire Regiment
" 1st Bn. Royal Welsh Fusiliers
" Worcester Regiment
" 2nd Bn. East Surrey Regiment
" 2nd Bn. Duke of Cornwall's L.I.
" 1st Bn. South Stafford Regiment
" 1st Bn. Essex Regiment
" Derbyshire Regiment
" King's Royal Rifle Corps
" Manchester Regiment
" Durham L.I.
" 2nd Bn. Royal Irish Fusiliers
" Argyll and Sutherl'd Highlanders
R.A.M.C.
Details } Left Ireland for South
Africa in the "Kildonan
Castle."
- 29th (T.) Lord Roberts arrived at Elandsfontein Station, 7 miles from Johannes-
burg.

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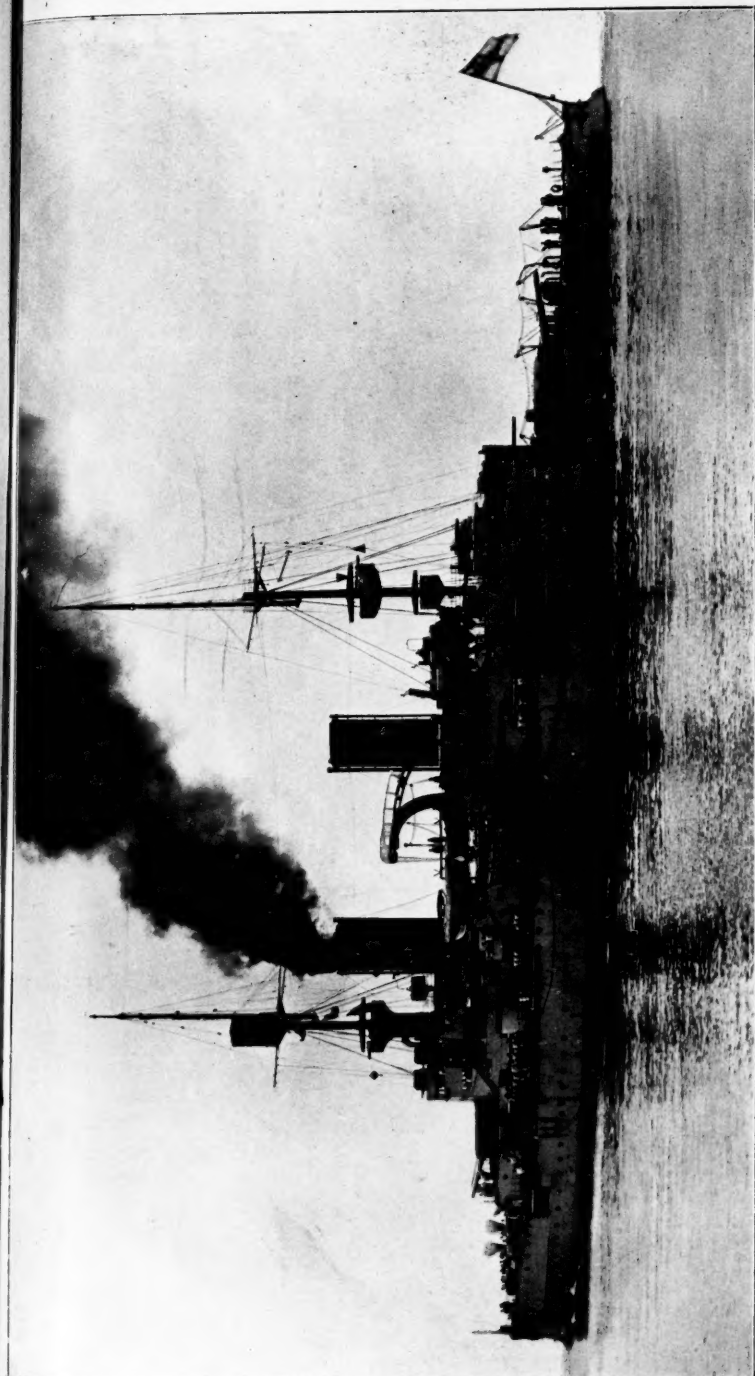
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